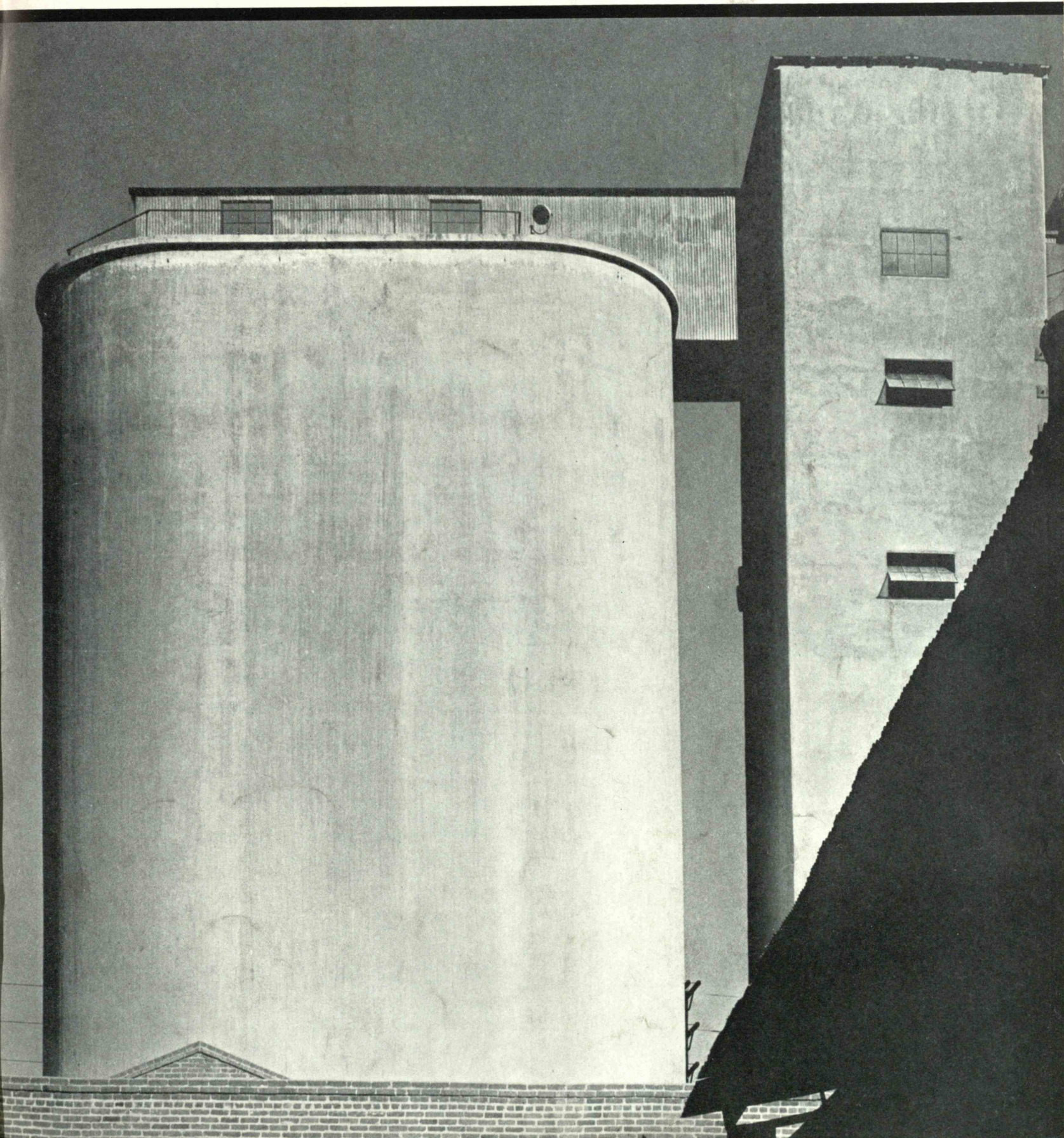


March 1941

TECHNOLOGY REVIEW

Title Reg. in U. S. Pat. Office



technology review

Published by MIT

This PDF is for your personal, non-commercial use only.
Distribution and use of this material are governed by copyright law.
For non-personal use, or to order multiple copies please email
permissions@technologyreview.com.



NORTON ABRASIVES

*Industry
Speeds Up
Cut-Off Operations*

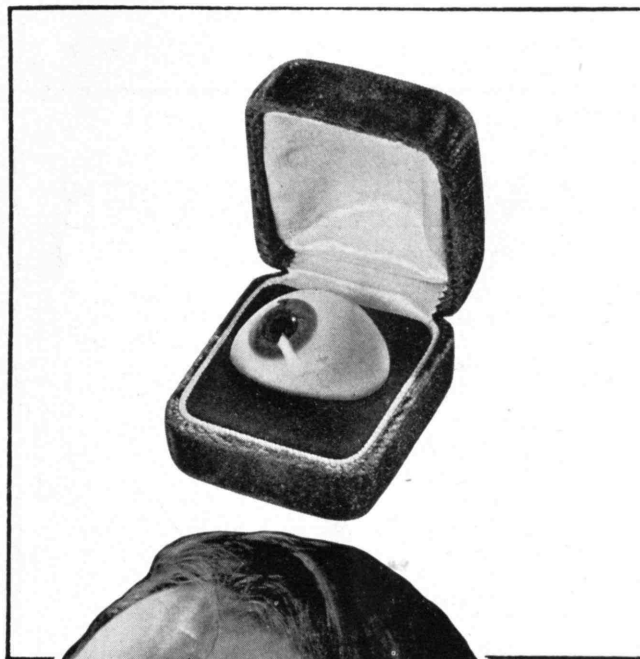
Norton Grinding Wheels are now cutting off steel bars, plastics, glass tubing, porcelain, tile, plate glass, asbestos, transite board, and similar products. Cut-off wheels using actual diamonds as the abrasive take care of the harder products, like fused quartz and cemented carbides.

WHEN IT'S A GRINDING PROBLEM, CALL IN NORTON ENGINEERING SERVICE

NORTON COMPANY
WORCESTER, MASS.

BEHR-MANNING DIVISION, TROY, N. Y. (ABRASIVE PAPER AND CLOTH)

An Eye... for An Eye...



***This Exchange Cheats Him . . . and YOU
Prevent it with American Optical Goggles***

\$50,000,000 is industry's annual Eye-Bill . . . headed by a "slight item" of 2,000 lost eyes. These are the loss-leader cases, in compensation, medical care, administration, loss of time and work.

And you have the inevitable choice of buying one of

these products for *your* men: Glass eyes for several thousand dollars apiece . . . or good American Goggles for less than two dollars a pair. *We sell both*, but we'd rather sell the goggles, every time. Ask your AO representative to explain the true economics of "Americanizing" each worker's eyes with comfortable American Goggles, fitted with deep-curved, extra-strong Super Armorplate Lenses. *Write now.*

American Optical Company

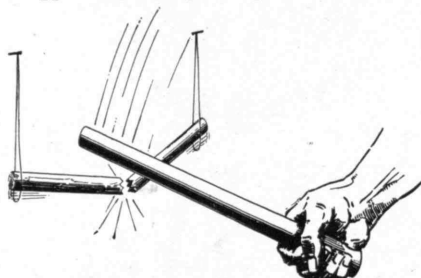
Factories at Southbridge, Massachusetts



MANUFACTURERS, FOR MORE THAN 100 YEARS, OF PRODUCTS TO AID AND PROTECT VISION

Just for Fun! A CHALLENGE TO YOUR INGENUITY

A BROOM handle, suspended as shown in the diagram, may be broken by a sharp blow near its center, *without injuring the threads that support it!* Can you explain?



We used this phenomenon in a testing machine developed to register ultimate strengths and deflections of test samples. Slow bending set a sensitive indicator: we had to prevent violent and much larger motions *in the same direction* [occurring at break] from altering the setting.

We specialize in industrial physics and offer a
"GUARANTEED RESEARCH SERVICE"

CALIBRON PRODUCTS, INC.
West Orange, New Jersey

**No. 000... the machine
for small parts
milling on a variety
of materials.**

**Investigate No. 000
for your work.
Complete information
on request.**

B.S. Brown & Sharpe Mfg. Co.
Providence, R. I., U.S.A.

BROWN & SHARPE

THE TABULAR VIEW

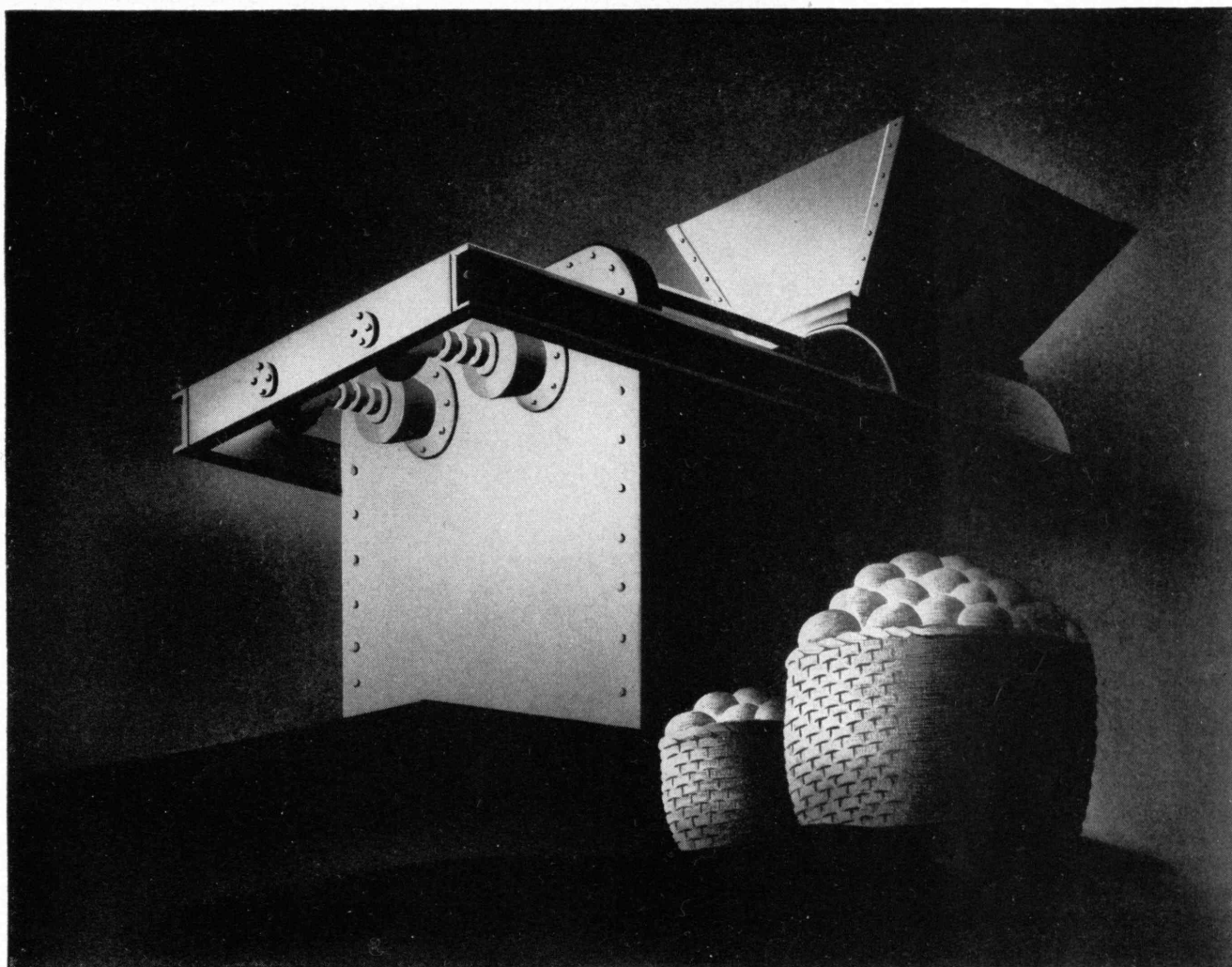
Phoenix? — Cities, it seems, are somewhat reptilian in the tenacity with which they cling to accustomed life. Thus it has eventuated that disasters to cities in the past, which might have been expected to allow for civic regeneration, have usually meant little more than mere resuscitation. Examining the record (page 198), JOHN E. BURCHARD, '23, finds softheartedness and hardheadedness the two chief reasons why rebuilding after a fire, an earthquake, a flood, has generally been rebuilding on the old site, in the old pattern. Several distinguishing factors, however, enter the problem which bombing planes, by destruction of metropolitan areas, are now fashioning for planners. These factors may be expected to contribute to better control when the day of reconstruction arrives. Director of the Albert Farwell Bemis Foundation at Technology, Professor Burchard is an editorial associate of *The Review*.

Yardstick. — Consumption of energy is clearly a measure of some aspects of a technological culture; production of materials to supply energy may likewise so serve. One such gauge is discussed for *The Review* (page 201) by PAUL COHEN, '35, Editorial Associate, whose frequent contributions give substance to the *Trend of Affairs*, and whose article on population and subsistence trends in our last volume will be remembered. Mr. Cohen is with the United Shoe Machinery Corporation.

Streamline Tricycle. — From function to form is the way of sound design; from functionalism to faddism is the fatal flip-flop of unthoughtful designing. Where the limits lie that shall distinguish one from the other is the question attacked in a penetrating essay in this issue (page 204) by ROBERT C. DEAN, '26, a member of the Boston architectural firm of Perry, Shaw and Hepburn, and an instructor in the Institute's School of Architecture.

Positive v. Negative. — Action of democracy against totalitarianism must begin in the mind and soul of democracy itself — in the taking of the moral initiative. Thus holds HENRY M. WRISTON, President of Brown University, in an essay (page 207) drawn from his address before the National Interfraternity Conference. Historian and internationalist, Dr. Wriston is a vigorous thinker on matters educational as well.

New Definition. — Establishment of the humanities in engineering education was important in the pioneering in education begun when William Barton Rogers and his colleagues opened the Institute in 1865. The history of the development of the humanities since then and analysis of the present functioning of humanistic studies at Technology are recounted for *The Review* (page 210) by ROBERT G. CALDWELL, who, as dean of the Division of Humanities since 1939, has ably clarified and consolidated work in the field. Minister of the United States to Portugal and then to Bolivia, Dr. Caldwell has had an extensive career as student and teacher of history, as diplomat, and as educator.



MEETING A THREE-WAY DEMAND

A large fruit juice extractor looks so simple that there would not appear to be any special problems in the selection of materials for its parts. Yet, the screw must stand high pressures, and tramp iron can cause serious trouble. Ripe fruit won't wait for machine repairs.

Because it meets all three demands of the service so well one manufacturer of extractors now uses nothing but cast Carbon-Molybdenum steel for the screws. The steel (1) develops the requisite strength

and toughness when normalized; (2) is comparatively inexpensive and (3) permits easy reconditioning when it is finally required — the worn spots being built up by welding and re-machined to original dimensions.

Here, then, is another case where the use of modern materials has economically achieved a distinct product benefit. Our book, "Molybdenum in Steel", is sent free on request to technical students and all others interested in modern materials for modern needs.

PRODUCERS OF MOLYBDENUM BRIQUETTES, FERRO-MOLYBDENUM, AND CALCIUM MOLYBDATE

Climax Mo-lyb-den-um Company
500 Fifth Avenue • New York City



Samson Cordage Works

Boston, Mass.

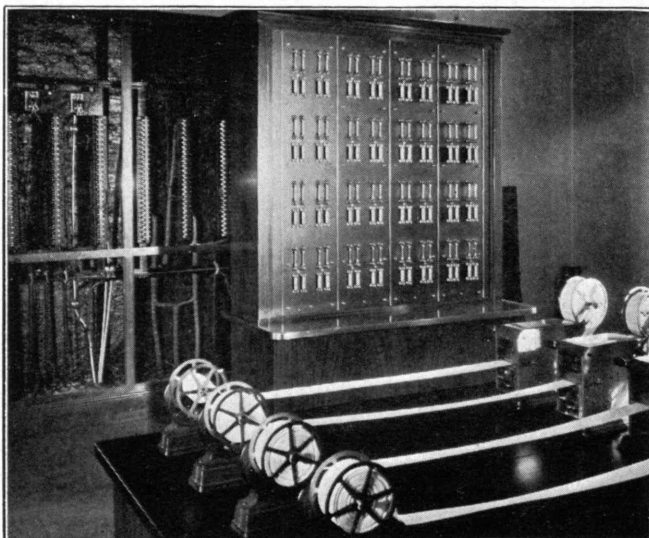
Herbert G. Pratt, '85, Chairman of the Board

Manufacturers of braided cords of all kinds, including sash cord, clothes line, trolley cord, signal cord, shade cord, Venetian blind cord, awning line, etc., also polished cotton twines, ladder tape for Venetian blinds, and specialties.



Reg. U. S. Pat. Off.

Our extra quality sash cord, distinguished at a glance by our trade-mark, the colored spots. Especially well known as the most durable material for hanging windows, for which use it has been specified by architects for nearly half a century.



LATOX CABLES

because of their dependability
were used on this
fire alarm equipment

Simplex Wire & Cable Co.
79 Sidney St., Cambridge, Mass.

MAIL RETURNS

What Are the Facts?

FROM ALFRED L. FITCH, '84:

The item on page 149 of the February issue concerning shark-liver oil reminds me of my experience about 1886. With three friends and two other men to operate the whaleboat, I went shark fishing from Nantucket. We caught eight sharks (sand sharks, the men said), and upon our return the fish were taken out onshore. In reply to my question as to what was done with them, one man said, "Make cod-liver oil of them." I never felt sure whether he told the truth or was just joshing, but if the former, the item in *The Review* does not describe a new practice. I wonder what the facts are.

North Easton, Mass.

The Next Will Soon Appear

FROM ROBERT A. LESHER, '13:

... May I commend the Editors of *The Review* for accepting and publishing Benjamin Lee Whorf's two articles, "Science and Linguistics" (April, 1940) and "Linguistics as an Exact Science" (December, 1940). My evaluation of his contributions is based upon some very recent findings resulting from researches that have been under way for quite a few years. Personally, I am so convinced of the significance of his results that I am actually discontinuing my own investigations for a period sufficient not only to become familiar with the source material of linguistics but also to subject myself to a short, intense training in order to be able to use, with as little error or distortion as possible, the general trends that are finally emerging from this field under Mr. Whorf's touch. His interpretive and integrative point of view in utilizing the inherent nature of language has been long overdue.

I have for some time been familiar with the works of Ogden and Richards, Jespersen, Max Müller, Whitney, Turner, Rozwadowski, and Malinowski, and recently have followed the efforts of Korzybski, Thurman Arnold, and Stuart Chase, '10, to bring the public interest to bear upon the question. Even with this background, I can say sincerely that I hope you can interest Mr. Whorf in making further contributions.

Washington, D. C.

Tossing a Few

FROM LORING C. FARWELL, '37:

With some misgivings because of the choice of subject and the relatively colorless style involved, I am submitting three articles [to be noted in *Technology Men in Action* in due course. — Ed.] as the work of a member of the Class of 1937. I toss direct apologies to any member of the Class who objects ... but no others in the Class seem to have cracked through. Maybe this will scare them into it.

At any rate, this letter provides an excuse for tossing a few compliments at the staff of *The Review* and the authors of its articles. I suppose such praise is old stuff in *The Review* Office, but I'd like to add the expression of one more graduate who appreciates the style and quality of the writing, the choice of subject, and, above all, the lack of extreme professionalism characterizing the magazine. There are times when the stimulus of information contained in it has almost awakened a latent desire to inquire into those studies which I handled less adequately in the course of my three years in Boston and environs. And that, sirs, is going some! *Ergo*, my compliments and my best wishes.

Ann Arbor, Mich.



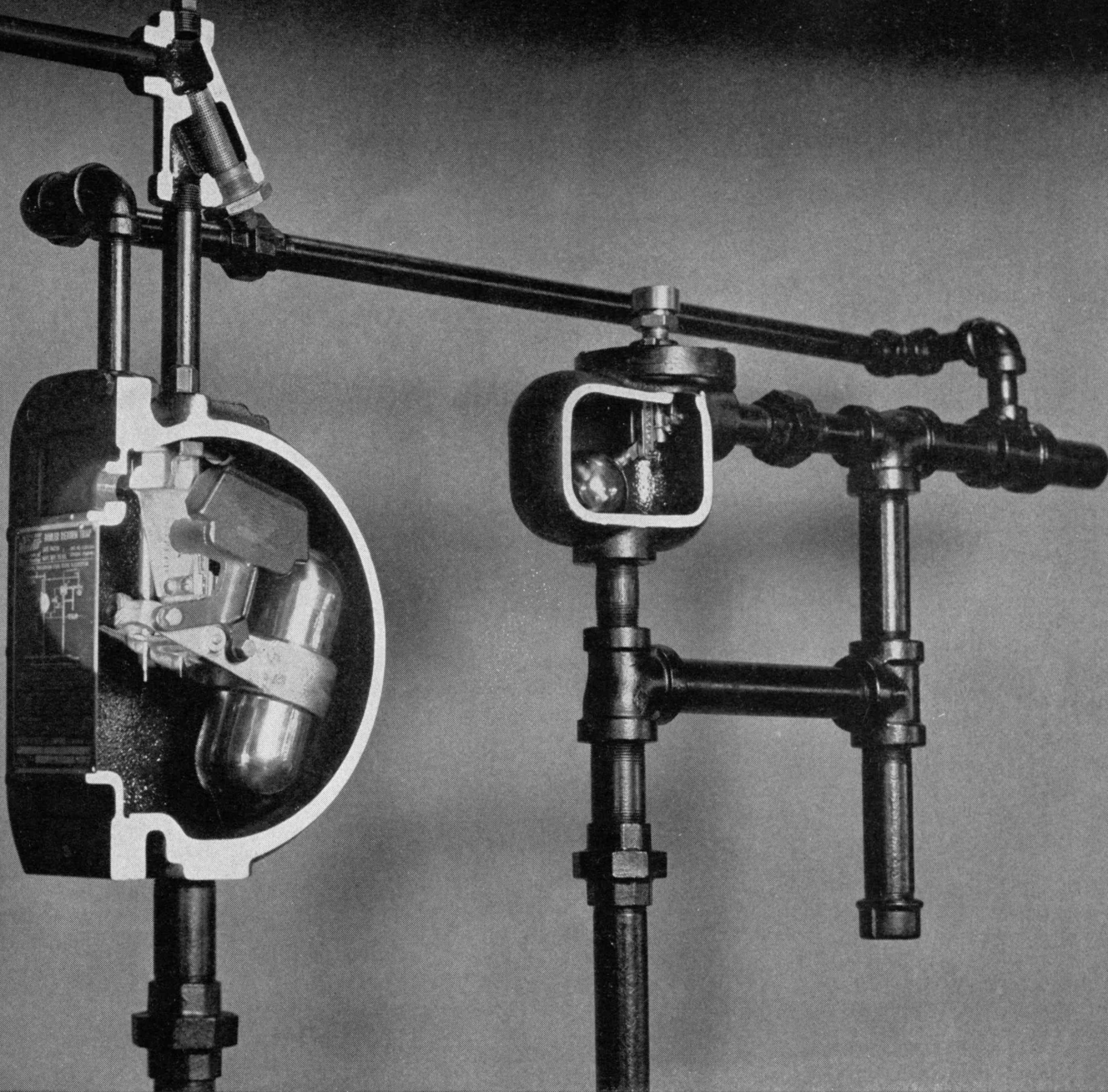
Transits and Levels are used on all largest works and by U. S. Govt. for utmost precision. Rental Insts.

New catalog, just issued, sent gratis

BUFF & BUFF CO. Boston 30, Mass.

L. F. Buff '97 — Henry A. Buff '05

A souvenir plumb-bob sent for 3c postage



Here's what makes an A-1 vapor-steam heating system! . . . the combination of Webster Boiler Return Trap, Vent Trap, Vent Valve and Strainer. The Webster Boiler Return Trap mechanism operates on a single monel metal shaft. Interior held in place by two studs and removable as a unit; Float of heavy gauge metal with no exposed seams. Valves all metal and self-aligning. Operation silenced by stainless steel bumper springs. For 500 to 16,000 sq. ft. EDR.

"—SAFETY FIRST..."

The Webster Type "R" System assures safe, dependable heating for medium sized buildings by assuring positive return of water to the boiler regardless of fluctuating pressures.

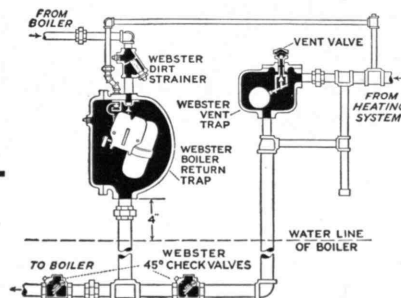
At low pressures water of condensation returns direct to the boiler by gravity. Any condition causing increase of pressure will bring the Webster Boiler Return Trap mechanism into operation. By alternately filling with condensation from the system and then discharging condensation into the boiler it assures against a fluctuating boiler water line . . . Air from the entire system is discharged

through Webster Vent Trap and Vent Valve.

Dependability is an outstanding characteristic of the Webster Boiler Return Trap as well as all other items of Webster System Equipment. The service of Webster Representatives in 60 principal cities is a further protection to the users of Webster System Equipment.

For further information about this modern dependable Webster Type "R" System of Steam Heating consult your local telephone directory for the address of nearest Representative or address:

WARREN WEBSTER & COMPANY, CAMDEN, N. J.
Pioneers of the Vacuum System of Steam Heating:: Est. 1888
Representatives in 65 principal cities :: Darling Bros., Ltd., Montreal, Canada



H. F. MARSHALL '19

Piping arrangement of Webster Boiler Return Trap and Type "R" System Basement Equipment.

—since 1888
Webster
Systems of
Steam Heating

Eberthella

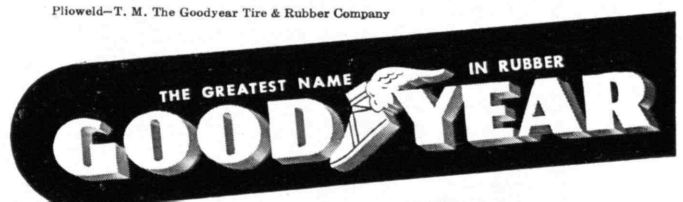
DOESN'T SWIM HERE ANY MORE

G.T.M. - Specified
GOODYEAR PLIOWELD-LINED
SEWAGE TREATMENT PLANT

EBERTHELLA TYPHOSA is the medical name of the virulent bacillus that causes typhoid fever. It thrives in lakes and rivers where careless communities dump their sewage. But scores of cities have found a powerful ally against Eberthella in the G.T.M.—Goodyear Technical Man. In these cities sewage is now treated and decontaminated by powerful chemicals stored in huge tanks lined with Plioweld on specification by the G. T. M. Plioweld is a corrosionproof rubber lining developed by Goodyear that seals metal against attack by the strongest acids. Without this protection, the equipment would be quickly destroyed by corrosion. But when lined with Plioweld it lasts

indefinitely, protecting the community's health. Plioweld is also specified by the G.T.M. for all types of industrial equipment requiring protection from chemical attack. For information write Goodyear, Akron, Ohio, or Los Angeles, California—or phone the nearest Goodyear Mechanical Rubber Goods Distributor.

Plioweld—T. M. The Goodyear Tire & Rubber Company





Wide World Photos, Inc.

Spahis of the "free French" troops with the British in Libya

VOLUME 43

NUMBER 5

THE TECHNOLOGY REVIEW

TITLE REGISTERED U. S. PATENT OFFICE

EDITED

AT THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY

CONTENTS for MARCH, 1941

THE COVER — LOS ANGELES GRAIN ELEVATOR

From a photograph by Cushing-Gellatly

TOWER OF THE OLYMPIC STADIUM, HELSINGFORS	FRONTISPIECE	192
SIR THOMAS GRESHAM'S PICTURE	BY JOHN E. BURCHARD	198
<i>As Devastation Stalks, Rebuilding Must Reckon with New Conditions</i>		
COAL AND THE WEST	BY PAUL COHEN	201
<i>Is Decline in Production Gloomy Portent or Natural Occurrence?</i>		
HOUSEWIFE AND ART	BY ROBERT C. DEAN	204
<i>Excellence in Each Depends on the Same Group of Qualities</i>		
THE WORTH OF THE INITIATIVE	BY HENRY M. WRISTON	207
<i>Limited Liability a Doctrine of Many Shortcomings in the Affairs of Nations</i>		
THE HUMANITIES AT TECHNOLOGY	BY ROBERT G. CALDWELL	210
<i>A Wider Definition Basic in the Education Begun in 1865</i>		
☆ ☆ ☆		
THE TABULAR VIEW		186
<i>Contributors and Contributions</i>		
MAIL RETURNS		188
<i>Letters and Pictures from Review Readers</i>		
THE TREND OF AFFAIRS		193
<i>News of Science and Engineering</i>		
THE INSTITUTE GAZETTE		213
<i>Relating to the Massachusetts Institute of Technology</i>		

Published monthly from November to July inclusive on the twenty-seventh of the month preceding the date of issue, at 50 cents a copy. Annual subscription, \$3.50; Canadian and foreign subscription, \$4.00. Published for the Alumni Association of the M.I.T.: Henry E. Worcester, President; A. Warren Norton, John E. Burchard, Vice-Presidents; Charles E. Locke, Secretary; Ralph T. Jope, Treasurer. Published at the Rumford Press, 10 Ferry Street, Concord, N. H. Editorial Office, Room 3-219, Massachusetts Institute of Technology, Cambridge, Mass. Entered as second-class mail matter at the post office at Concord, N. H. Copyright, 1941, by the Alumni Association of the Massachusetts Institute of Technology. Three weeks must be allowed to effect changes of address, for which both old and new addresses should be given.

Publisher • H. E. LOBDELL

Editor • F. G. FASSETT, JR.

Business Manager • R. T. JOPE

Editorial Associates

J. E. BURCHARD

PAUL COHEN

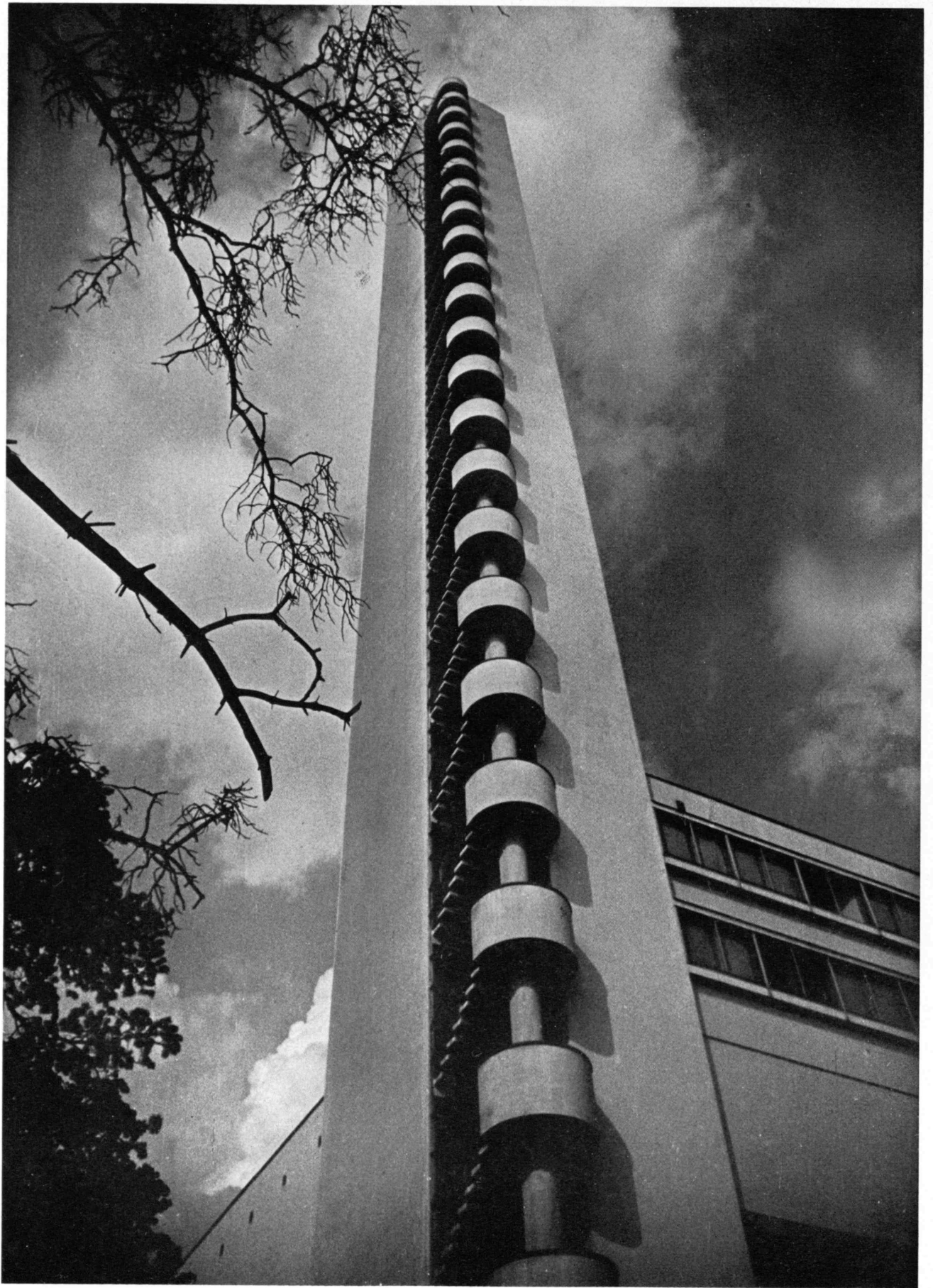
T. L. DAVIS

J. R. KILLIAN, JR.

P. M. MORSE

J. J. ROWLANDS

Staff { Editorial: JANE McMASTERS, RUTH WESTWOOD
Business: MADELINE McCORMICK, RUTH KING



THE TECHNOLOGY REVIEW

Vol. 43, No. 5



March, 1941

The Trend of Affairs

Help Yourself

TO the list of places in which the American consumer has the privilege of spending his money is being added the supermarket, symbol of the present trend toward self-service and increasing unit size. Like every trend in retail distribution, this one is important because, out of every dollar the consumer spent in 1929 (and the ratio is much the same today), fifty-nine cents went to cover the costs of getting the goods to him.

Mass production and technical advances in industry have brought about a threefold increase in output per worker during the past seventy years, it is estimated by the Twentieth Century Fund. But mass production demands mass distribution, and mass distribution by this standard has not done so well. Between the 170,000 factories (counting those whose output is worth \$5,000 or more a year) and the 130,000,000 people of the United States stand some 175,000 wholesaling agencies and 1,500,000 retailing establishments. All told, half the gainfully employed workers in this country are engaged in one or another phase of distribution or service, and their output per man has not shown any material increase since 1870.

The foregoing figures do not necessarily reflect on the efficiency of the distributive function. Conditions have changed since the miller ground wheat for the local inhabitants. The customer now expects a great deal more service than the bulk of the world's stores have ever

offered in the past.

Even prior to the war, most of the world bought in a seller's market, reminded by queues every now and then that demand was

pressing on supply and not the reverse. As defense takes up more and more of the capacity of industry, this country may also swing toward such a condition, but for the moment at least, the American consumer remains virtually the sole possessor of the right to pick and choose on a grand scale. Manufacturers still fight for his favors by such devices as rapid changes in style, extensive advertising, and handsome packages; retail stores still grant him credit and delivery and return privileges as well as other inducements.

In all probability, the costs of distribution would be higher were it not for the many innovations which have been continuously changing wholesaling and retailing methods. The past eighty years have seen the rise of the chain store (the Great Atlantic and Pacific Tea Company got under way in 1858), the department store, and the mail-order house. All have given to retailing the advantages of able, specialized management and the ability to buy in large quantities — characteristics which appear to be notoriously absent from the field as a whole. Only 8 per cent of retail stores are members of chain organizations, but this 8 per cent does 23 per cent of the business. The remaining retailers are independents, most of them with yearly gross so small that their net incomes are near the disappearance level.

Against this background, a slow but steady trend toward mass distribution in the retail field has been visible for the past decade. Particularly in the grocery business, the smallest stores, which have the highest mortality rates, appear to be giving way to larger, departmentalized units which are not so apt to grant credit or delivery service and are more apt to ask the customer to help himself. As defense work makes greater demands on the labor market, the trend toward self-service should accelerate. Customers seem to feel that they are adequately recompensed, however, by the lower prices which usually prevail at such stores. Chain groceries, for

◀ *Tower of the Olympic Stadium at Helsingfors, Finland, photographed in August, 1939, by B. W. Irvin, Jr., '38, who utilized his traveling fellowship in architecture in 1938-1939 in a tour of photographic study of architectural subjects. Other examples from his collection are on pages 196 and 197 of this issue of The Review; still others are to appear later.*



Wesley Bowman

One of the largest steam shovels in the world, used for clearing away surface dirt for strip coal-mining

example, with an average gross considerably more than twice that of independents, manage to undersell the latter consistently in spite of taxes which many states levy on chain units.

In unembarrassed coexistence with this trend to larger stores is another toward decentralization of certain retail functions. For some years there has been a drifting of many department stores to the suburbs of the large cities. Although greatly aided, if not made possible, by improvements in urban transportation which permitted the movement of large numbers of people into the shopping areas, the department store must now reckon with the fact that traffic congestion has long since reached the point where greater concentration is discouraged. Regardless of location, department stores have shown considerable progress toward modernized architecture, improved layouts with more of the merchandise on display, and rapid utilization of advances in illumination and air conditioning.

The store which exhibits many of the foregoing trends in their extreme form is that hardy flower of the depression, the supermarket. Defined by the Super Market Institute as a departmentalized cash-and-carry store with a minimum floor space of 5,000 square feet, a yearly gross that exceeds \$250,000, and at least one self-service department, this type of store is now estimated to handle perhaps 20 per cent of the huge retail grocery business. One commentator has noted that, with the best sites for such stores already well developed (more than 7,500 are believed to be in operation), further expansion should be in the direction of smaller, neighborhood supermarkets — almost a contradiction in terms.

Attracting their customers with low prices, a tremendous array of a wide variety of goods, and very often free parking facilities, these stores are showing a tendency to handle commodities quite foreign to the grocery field: Many have drug and cosmetic counters, automobile tires are not unknown, and one enterprising merchant reports good results from a self-service liquor department.

Another Coming of Age

ON more than literary grounds can we speak of infant, adult, or senile industries. Most of the products on which industries are based can be shown eventually to follow a pattern of rapid initial development, stability, and finally — if no drastic innovations appear to give them renewed vigor — eclipse, as more potent competing devices develop. The transport airplane, only yesterday indisputably an infant prodigy, is well through its period of rapid advance in basic performance, according to Edmund T. Allen, '23, director of aerodynamics and flight research for the Boeing Aircraft Company, writing in the *Transactions* of the American Society of Mechanical Engineers; more and more attention is centering on improvements which are

primarily refinements of accepted structures.

Although not all the speed inherent in flight at higher altitudes has been exploited, the speed at which transport planes travel is showing a tendency to increase more slowly. The same condition obtains in economy of operation and even in the size of such planes. The amount of work required at cruising speeds per ton-mile of pay load, a fundamental measure of plane performance, is leveling out. Obsolescence is slower, and the construction of new models for the air lines is taking enormously more time and money than was true in the early days of the industry. Emphasizing Mr. Allen's conclusions is the trend of airplane motor design, which appears to be approaching rock bottom at about one pound per horsepower. The new 2,000-horsepower engines have no better horsepower-weight ratios than do their 1,000-horsepower brothers.

On the other hand, changes concerned with the reliability of airplane performance, with safety, and with the comfort of passengers are occurring rapidly. Because air lines have found that traffic volume responds strongly to increases in passenger comfort, the weight of luxury items — space per passenger, food service, air conditioning, and related matters — has grown from 10 pounds a passenger in 1930 to about 180 pounds in 1939.

Both the automobile and the locomotive had similar early histories. Daimler patented the high-speed internal-combustion engine in 1885-1886, and by 1894 Krebs had designed the Panhard car which, with its vertical in-line engine under a hood at the front of the car, a clutch behind the engine, a sliding-gear transmission, differential gears, and so on, had most of the basic

features of the present automobile. By about 1910 (Ford began manufacture of the Model T in 1909) the automobile was a vehicle capable of successful and economical operation.

As for the locomotive, Trevithick's crude device of 1803-1804 was followed in 1829 by Stephenson's *Rocket*, which had most of the basic elements now associated with the steam locomotive. The *North Star*, built in England in 1846, was recognizable, even in its outward appearance, as the direct ancestor of the present rail giants. Furthermore, and these facts occasion considerable respect, it reached a speed of 78 miles an hour and averaged 2.5 pounds of coal per horsepower hour. Present engines don't do much better. It is interesting that about the only notable change in locomotives during the second half of the Nineteenth Century was in size. The Westinghouse brake, demonstrated in 1868, was concerned with safety, not with engineering performance.

How Many?

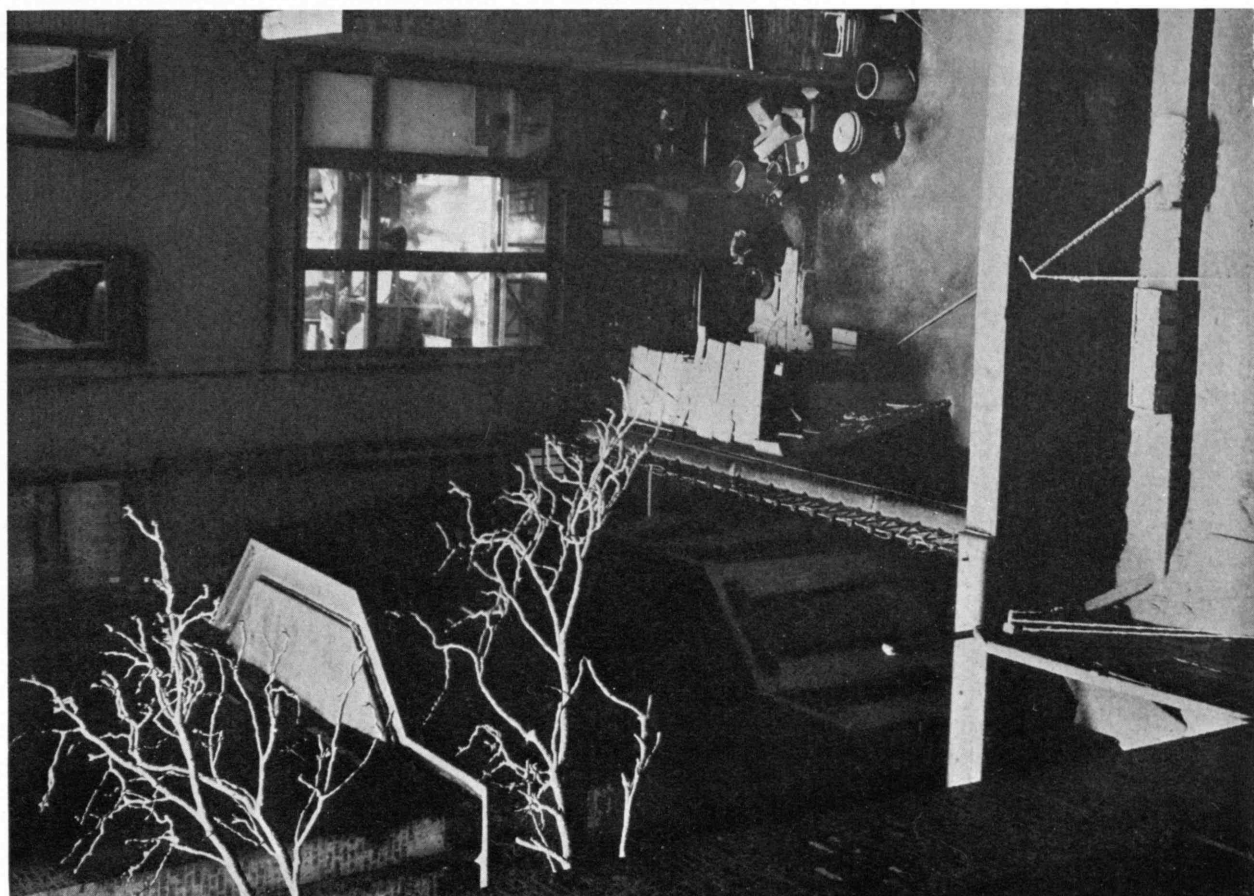
POINTING out parallels among census figures is dangerous business if the pointer undertakes to suggest cause-and-effect relationships on the basis of the figures alone. Yet few diversions of the quidnunc variety are more engrossing or more widespread than the citing of variegated and often unrelated statistics, which are made interesting and alive just because they are men-

tioned together. With this implied caveat in mind, here are a few numerical items which the news has turned up during these recent weeks.

The horse, according to the first eight states reporting in the 1940 census of agriculture, isn't what he used to be, statistically,—in fact, he has been steadily getting less so. From 1930 to 1940 the total decline in the number of farm horses in the eight states was 384,458. Home state of man's equine ally, Iowa, accounted for 312,266 of the missing steeds, the drop being from 1,040,479 in 1930 to 728,213 in 1940. Home state of the automobile, Michigan, saw a drop of 36,882, from 381,357 in 1930 to 344,475 in 1940. In 1915 the number of horses on farms in the United States was nearly 22,000,000. This had dropped to less than 15,000,000 by 1930.

In 1915 the automobile industry of the United States produced a total of 969,930 passenger cars and trucks. The total for 1940, according to preliminary statistics of the industry released by the Automobile Manufacturers Association, was 4,476,000, which compares with 3,510,178 for 1930 and has been exceeded only in 1929 and 1937. Factory sales for 1940 are listed as 25 per cent ahead of those for 1939.

The Bureau of the Census reports that on April 1, urban population of the United States numbered 74,423,702. This figure represents an increase of 5,468,879 or 7.9 per cent over 1930. Rural population increased 3,425,350 to 57,245,573 during the decade. The gain in rural population was 6.4 per cent. Lest one should con-



Paul J. Woolf

contrasts between the appearance and the reality.

Photographic trickery is all too easily overworked, but occasionally, as in this shot of a Surrealistic bedroom, turns out to offer interesting

clude that all the talk about "back to the soil" was utterly meaningless, it should be observed that the rate of increase of the urban section of the population was slowed considerably in the decade. In 1910, 45.8 per cent of the total United States population was urban; in 1920, 51.4; in 1930, 56.2. The 1940 figures show 56.5 per cent urban.

Sound Drinkers

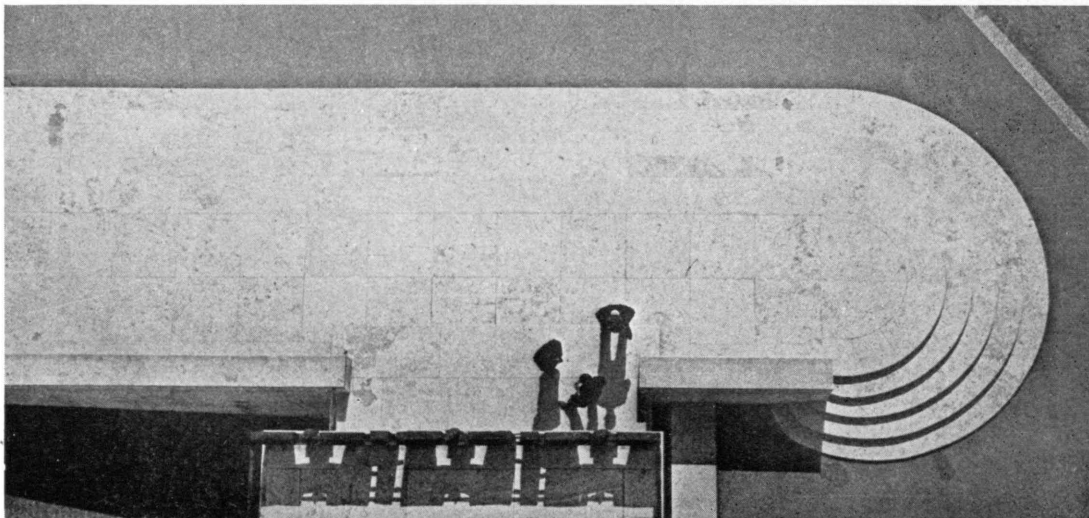
SOUNDPROOFING can defeat its own purpose if it is not properly done, results of Institute research into the problems of room acoustics demonstrate. Install a very soft ceiling covering in a room, with no absorptive material elsewhere, and the ceiling will absorb so well that it pushes the sound waves away from itself, to rattle between the hard walls. If the absorptive material is too soft and is all concentrated in one section of the room, results will be poor. Properly placed, however, absorptive material will literally "suck in" sound waves to such an extent that it can absorb half as much again of sound energy as would naturally fall upon it. Absorption coefficients of 150 per cent may thus be attained. A coefficient of 100 per cent is recorded when a unit area of absorptive material takes up the whole amount of sound energy which would normally impinge upon it if a uniform distribution of the energy is assumed. Measurement shows, however, that absorbers properly placed not only drink up the normal amount of energy but are thirsty enough to consume an additional 50 per cent.

These generalizations are based on investigation of acoustic phenomena which have busied Philip M. Morse, Professor of Physics, and Richard D. Fay, '17, Associate Professor of Electrical Communications, during the past two years. Setting out to survey the whole field of noise and noise absorption in rooms, the Institute researchers, working at times with investigators at Harvard, first recast the classical theory of Sabine through the use of modern theoretical and experimental techniques. As originally stated in 1900 on the basis of his studies at Harvard, Sabine's theory had worked with entire satisfaction for experiments with less refined equipment, but the development of more delicate instru-

ments had necessitated a rechecking of the theory in order to bring it into line with experimental results. The question of the reaction of absorptive material upon the distribution of sound in the room, for one thing, had not been reckoned with in the earlier work. Readers of Professor Morse's article in *The Review* for last November will recall the history of the Sabine experiments.

As it has been re-worked, the theory now permits derivation of curves for the acoustical properties of a material as a function of the frequency of incident sound waves. The dependability of the theory is well illustrated in the fact that when a set of such curves was worked out by Professor Morse at the Institute and the properties of the same material were experimentally determined by Dr. L. L. Beranek at Harvard without reference to the curves, the two sets of results were in agreement. Porousness, resistance within the pores, effective density of the air, and the presence of loose material in the pores are the constants defining the properties of a material; from them it is possible to ascertain how much sound the material will absorb. Attainment of this degree of control of theory now permits consideration of the possibility of designing an ideal absorber. Knowledge of the transmission of sound energy into a material can lead to knowledge of transmission through the material; hence by lamination of materials the investigators hope to enable the development of absorbers "tailor made" in such fashion as to meet directly the specific needs imposed by given installations.

One practical application of the results of Professor Morse's theoretical and Professor Fay's experimental studies is in the room at Technology which houses the generators supplying electricity to the supermagnets of Francis Bitter, Associate Professor of the Physics of Metals. When the generators first went into action, noise poured out of the room through air ducts installed to bring in air for ventilation, and with considerable disturbance to adjoining lecturers. After a study of the situation, the investigators decided to install honey-combed ducts to trap noise which, traveling outward along the center of the ducts, had avoided absorption in the walls. In addition, special laminated sound-absorbing material was placed around the generators themselves to absorb the sound as soon as it was generated.



Abstract design in a straight-down view of the entrance to an elementary school in Rome

B. W. Irvin, Jr., '38



Towers and arches compel the photographer anywhere. At the left is Olaf's Castle at Savonlinna, Finland; at the right, the Piazza S. Francesco at Assisi, Italy. These photographs were among hundreds taken by B. W. Irvin, Jr., '38, who as traveling fellow in architecture in 1938-1939 made a tour of photographic study of architectural subjects.

By this means, sufficient ventilation is provided, but the noise level is cut down so that ordinary conversation can now be carried on in the control room next to the generators. Where previously lecturers in near-by classrooms were drowned out, now it is difficult to know when the generators are turned on.

The problem involved here is one of considerable importance in aviation and in architecture as well. In airplanes, ventilation necessitates intake ducts from the outside, and since even a very small uninsulated hole can let in a great deal of sound energy and overload the absorptive powers of usual cabin-wall insulation, means of insulating the ducts to bar sound out are desirable. Similarly, ways of preventing cross talk from room to room in a building via air ducts are of value.

In settling these problems, the cross section of the duct and the placing of the absorptive material are of importance. Both of these requisites are clarified by the theory resulting from the Institute work.

Horse without Breath

FIERY breath is a time-honored attribute of the iron horse and will doubtless continue to be. Yet steam locomotives without fuel or fire, but with steam "reservoirs," are now performing certain services with greater economy, safety, and convenience than do engines with fired boilers. First conceived over seventy-five years ago and used to some extent in Europe since that time, the "breathless" iron horse has until recent years been

almost unknown in the United States, where it has had only occasional applications and has never found widespread use. Now a definite future is seen for fireless steam power, and an early broadening of its field is anticipated. Among present users are the navy yards at Charleston, S. C., and New York City.

The fireless steam locomotive is a very simple machine: It carries a tank of hot water which supplies steam to a conventional engine. No firebox, no fuel, no boiler tubes are required. The tank is charged with steam from a power-plant boiler and provides several hours of normal service before recharging is necessary. The engine, easily operated by one man, is clean and quiet. For certain applications it possesses definite advantages of economy and safety over the steam locomotive with a fired boiler. For example, the fireless locomotive has lower first cost; requires less in repairs and upkeep; makes possible greater economy of fuel, which is burned in a stationary power plant; and has no fire hazard even in flammable atmosphere. While standing, it wastes much less energy than does a fired engine. Limitations in the use of it are the necessity for access to a steam boiler and the fact that only rather short hauls may be undertaken between trips to the boiler. Typical applications are freight switching at industrial plants and coal haulage in mines.

Steam pressure for the fireless locomotive may be almost any amount available, higher pressures permitting greater energy storage. A pressure of 160 pounds a square inch has been used (*Concluded on page 220*)

Sir Thomas Gresham's Picture

As Devastation Stalks through the Cities, Planners Will Find Slight Parallel in the Past; Rebuilding Must Reckon with New Conditions

BY JOHN E. BURCHARD

... I went againe to the ruines, for it was now no longer a Citty. . . . — John Evelyn, September 10, 1666.

... Walked into Moorefields (our feet ready to burn, walking through the towne among the hot coles). . . . The Exchange a sad sight, nothing standing there, of all the statues or pillars, but Sir Thomas Gresham's picture in the corner. . . . — Samuel Pepys, September 5, 1666.

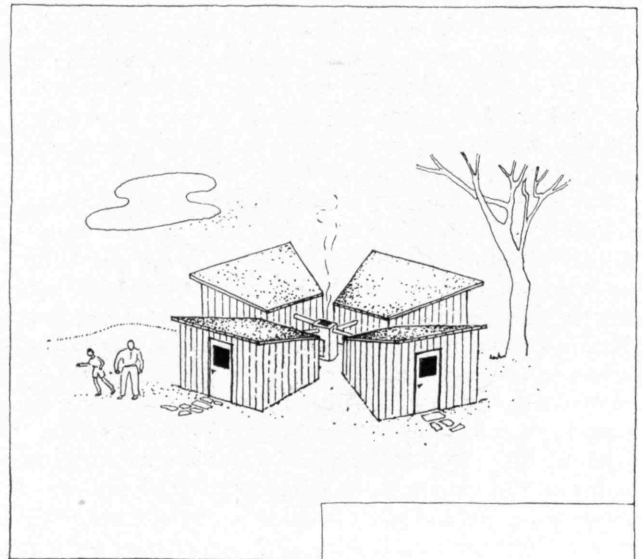
SUPERFICIALLY, London of mid-September, 1666, and London of mid-January, 1941, had much in common. Near the latter date Mollie Panter-Downes could write in the *New Yorker*: "... One had to pick one's way over the hoses that lay coiled across the dark little alleys. Some of the fires were still smoking. . . ." Such words might seem to echo those of Evelyn in the earlier time: "... Thence thro' Cornhill, &c. with extraordinary difficulty, clambering over heaps of yet smoking rubbish, and frequently mistaking where I was. The ground under my feete so hot, that it even burnt the soles of my shoes. . . . Nor was I yet able to passe through any of the narrower streetes but kept the widest; the ground and aire, smoake and fiery vapour, continu'd so intense that my haire was almost sing'd, and my feete unsufferably surbated. The bie lanes and narrower streetes were quite fill'd up with rubbish, nor could one have possibly knowne where he was, but by the ruines of some Church or Hall, that had some remarkable tower or pinnacle remaining. . . ."

Though, as we shall see, there are noteworthy distinctions to be drawn between the problem set by the early fire and that created by the new forms of devastation, for the moment it will profit to examine more closely the events of 1666. The fire itself might have been stopped much sooner if demolition, which ultimately was used, had been practiced at the beginning. On this point Evelyn remarks: "... This some stout seamen propos'd early enough to have sav'd nearly the whole Citty, but this some tenacious and avaritious men, aldermen, &c. would not permitt, because their houses must have ben of the first. . . ." This is probably a fair statement. Evelyn was himself a man of property. The attitude is to be remembered. It has not disappeared. It has affected every effort to improve cities.

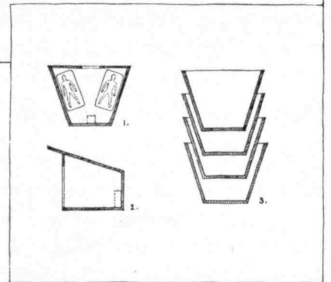
Except for sporadic outbursts, the fire, which started on September 2, had stopped by September 6. Four days later, King Charles received Christopher Wren, who by that time had made a plan for rebuilding the city. On September 13, Evelyn presented his plan; on the twentieth, Valentine Knight came forward; on September 21, Robert Hooke. Knight was a soldier. Hooke and Wren were mathematicians, the latter an

untraveled architect as well. Evelyn had in 1662 been commissioner for reforming the buildings, ways, streets, and incumbrances, and regulating hackney coaches. He was at the time one of the commissioners for repairing St. Paul's. As town planners, all were but amateurs.

In the light of what ultimately happened, the Wren plan was admirable. It was probably impossible to achieve, for not one building or street was to keep its old place, so that a unification or reparceling of property would have been required — a degree of co-operation which the world has not even yet attained. Evelyn's scheme, more formal, was subject to the same criticism. Professor Hooke's plan has disappeared. Captain Knight, whose plan betrayed no great imagination, did work out financial details, including taxes to support the army. For his pains he landed in jail. Knowing how dangerous the publication of such a proposal would be, the King sequestered the captain instead, protesting in the journals: "... As if his Majesty would draw a

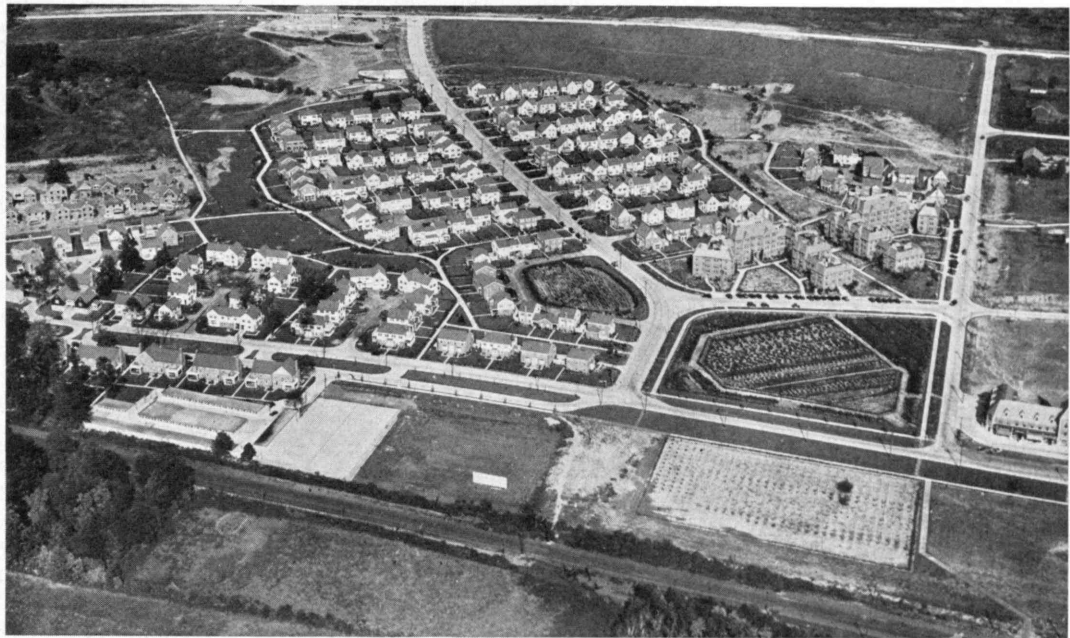


Housing in elemental terms — "transportable primitive shelters" as designed by Alvar Aalto for use in Finland's emergency. Planned for ultimate entire removal, the units can be nested for transit and assembled around a central stove in various ways, one of which is sketched. The units are designed to be built of materials locally available. Plan (1), section (2), and method of stacking (3) are also shown.



Arnold Wasson-Tucker

This view of the planned community of Radburn, N. J., taken some seven years ago, shows areas then available for further development. The "super blocks" of the plan are clearly shown.



George A. Douglas

benefit to himself from so public a calamity of his people, of which his Majesty is known to have so deep sense, that he is pleased to seek rather by all means to give them ease under it."

The other planners fared better. Evelyn remained an adviser of the King, while Wren and Hooke were put on the committee for rebuilding London, even after their own plans had been jettisoned. Considering the pressure under which the committee worked, at a time when the city was still in a panic, considering the limitations imposed by property rights, it is probable that they did a good job. In such details as the variation of street widths, in the methods for paying off property owners whose land simply had to be expropriated, the committee showed intelligence and integrity. Yet postfire London was not a workable city.

At the outset such an unsatisfactory result did not seem likely. King Charles had lived long abroad, had admired the monumental capitals of the Continent, was apparently well disposed toward Wren. On September 13, the King published a proclamation which remarked that he personally had suffered more loss than any other owner; that rules could not be laid down for rebuilding, but that premature rebuilding of houses would not do; that building therefore could not be commenced until further instructions issued. Some streets were decreed to be wider than heretofore; there was to be a quay, which was to be zoned against "Brewers, or Diers, or Sugar-Bakers, which Trades by their continual Smoaks contribute very much to the unhealthiness of the adjacent places. . . ."

On the same day, after presenting his plan to the King, Evelyn wrote in his diary: ". . . Whereupon after dinner his Majesty sent for me into the Queen's bed-chamber, her Majesty and the Duke only being present; they examin'd each particular, and discours'd on them for neere an houre, seeming to be extreamely pleas'd with what I had so early thought on. The Queene was now in her cavalier riding habite, hat and feather, and horseman's coate, going out to take the aire. . . ."

But it was Evelyn who took the air. Even as late as September 27, he could write to Sir Samuel Tuke with some confidence that "they are now busied with adjusting the claimes of each proprietor, that so they may dispose things for the building after the noblest model. . . . And truly there was never a more glorious Phoenix upon Earth, if it do at last emerge out of these cinders, & and as the designe is layd, with the present fervour of the undertakers. . . ." The fervor did not, however, persist. The phoenix, if it emerged at all, had its wings thoroughly clipped by those adroit bird fanciers, the landholders.

The picture of Sir Thomas Gresham, founder of the Royal Exchange, still peers too fiercely from its corner. This story of London states a motif of city building which is as old as the institution of private landownership and which is steadily repeated whenever the occasion arises. It is of great importance that this motif be stilled. The cities of the world stood in 1940 in most precarious position. They were gradually dying in the middle and stretching their decaying hands farther and farther over the surrounding countryside. Students of city planning were in general agreement that self-immolation was only a matter of time unless serious efforts were made to prevent it. A city might well have died without ever feeling the impact of a bomb.

Prior to recent efforts, opportunities have arisen for the creation of cities competent to serve their time. Some of the best of planned cities have been those which have sprung full panoplied from the will of the state. Often they have been capitals — New Delhi or Tel Aviv, adjacent to old towns of the same names; Canberra, raising itself majestically on the solitary Australian plain. Sometimes they have been the result of settlement plans — Littoria, on the reclaimed Pontine marshes; Norris and Boulder City, near great dams. Sometimes they have been erected by industry — Kohler, Wis.; Arvida, Quebec; or Kingsport, Tenn. They may have been residential — Welwyn or Radburn; or completely planned green-belt towns which

observed every principle of good arrangement except those imposed by economics. But all such cities and towns have been largely free from the major handicaps springing from sentiment or greed, free either because the builder obtained the site before the plan was well known or because he had sufficient power after the plan was known to prevent shenanigans by realtors or proprietors.

This has not always been the situation. It will be recalled that Pierre L'Enfant, the hot-tempered planner of Washington, had endless squabbles with the commissioners of the district; that he was accused of holding up plans of the city at the time of the auction because he feared that early purchase of private lands would put difficulties in the way of the execution of his plan; that he personally tore down a house built by Daniel Carroll of Duddington across what was to be New Jersey Avenue. Daniel Carroll (not he of Duddington but the commissioner) wrote to Madison: "The exorbitant and unreasonable expectations of Daniel Carroll of Duddington at one end of the city and Robert Peters at the other, may check in a degree the public good & do prejudice to themselves." Major L'Enfant ultimately had to quit. It is good luck that his plan survived, even though recent years have expanded it with less intelligence.

Sometimes again, leaders of great power have found it possible to free a plan by condemnation. The ancient fortifications served Paris well for its boulevards and Vienna well for its Ringstrasse, though both were ultimately choked up again. Stockholm has gradually acquired title to enough of the land within her city limits so that a good plan can emerge. Free funds, dauntless courage, and ruthless determination have permitted Mayor La Guardia and his brilliant lieutenant, Robert Moses, to move part way in freeing Manhattan from the constricting coils.

But offhand the wholesale destruction of large urban areas seems to proffer the unique opportunity. Hence those who wish to find in the present dark world a ray of hope for the future are tempted to feel that in the present disasters lies not destruction of cities but their ultimate salvation. There is reason for this hope, but let us look first at the obverse of the picture. Previous disasters in their effect on the city are not encouraging. They fall generally under the heading of conflagration, though the fires themselves may have been caused by war (Dresden, Moscow), by earthquake (Yokohama, San Francisco), or by sheer human carelessness (Chicago, London). Conflagrations offer perhaps a poor analogue for the devastation wrought by the bombing plane. This would be true if only because of an intrinsic difference between the kinds of psychic effect produced on the population by each of the catastrophes. The first—fires—are fortuitous, capricious, works of a whimsical devil or an irate God, depending on whether the observer is agnostic or fundamentalist; the second—bombings—are planned works of systematic destruction done by men deliberately, coldly, objectively. Nevertheless, in the absence of any better comparison, it will be useful for us briefly to survey the results which previous major fires had on city plans.

It must be admitted at once that such fires seem to have played no very great role in the history of cities, often going unmentioned. Yet they have been extraordinarily common. Istanbul witnessed eighteen, of which the latest was in 1870. Moscow had six of importance before the classic blaze of 1812. London's historic five culminated with that of 1666, which we have noted. Memel had five also, with the latest in 1854. They have been suffered in Edinburgh, Cork, Paris, Weimar, New York, Pittsburgh, San Francisco, Chicago, Baltimore, Boston, Dresden, Hamburg, Copenhagen, Liverpool, Glasgow, Marseille, Königsberg, Poznan, Tokyo, Yokohama, Manila, Bombay, Leningrad, Stockholm, Bergen, Canton, Cuzco, and Valparaiso. Patriotic citizens of other places may be affronted by this list.

The Chicago fire of 1871 was, save for the San Francisco fire of 1906, the greatest of modern times. Contemporary writers record that "rebuilding began before the cinders were cold," that the business district was rebuilt within a year. The only accomplishment seems to have been hamstringing wooden construction in the center of the city, and later in the whole city.

This has been the usual result. Enterprising citizens have made speeches among the flames and put up shacks and "to let" signs while water was still gushing from the hydrants. The business district, which heretofore most rigidly has strangled the city, is rebuilt before any new plan can be made or considered. Can burned Phoenix idly stand while neighbor Zenith waxes fat? Generally, mild improvements have been made in the legal construction requirements; occasionally some streets have been widened. When the East Side of New York burned in 1835, the chief boon was the establishment of the Croton River Water Works; the principal business quarter of Baltimore, destroyed in 1904, arose again but at a uniform height; the \$75,000,000 fire in the business district of Boston, 1872, led to solid rebuilding with "widened and straightened streets"! Finally weep for San Francisco. Daniel Burnham had been commissioned to do a new plan for the city and had submitted it before the earthquake. It was well received. But the 1906 disaster, instead of accelerating achievement, actually resulted in complete dropping of the plan! Slight wonder, then, that planners are not entirely convinced that in the present catastrophe lies an unparalleled opportunity for our cities.

It is certainly true that for every St. Michael's smashed in Coventry were hundreds of ramshackle dwellings unfit for human habitation; that from the ashes of that flattened town can rise a city which would do more than gladden the heart of the archaeologist or the dilettante cutting blooms from the bush of the picturesque. To raise money to rebuild a bombed cathedral or a *monument historique* is unfortunately a lot easier than to finance the new housing which might rise from the shambles of the erstwhile picturesque slum. On Sunday, December 29, the Nazis caused the great 1940 London fire. By January 4, a wealthy young man had come forward offering to duplicate the Guildhall as soon as the war should be over. A brisk discussion now is being waged between those who would meticulously rebuild all the Wren churches and those who wish to strike out along new lines, (*Continued on page 220*)

Coal and the West

Is the Decline in Production of the World's Chief Source of Energy a Gloomy Portent or a Natural Occurrence in a Developing Culture?

BY PAUL COHEN

OSWALD SPENGLER said that civilizations exist in cycles; like a living thing, a civilization reaches a peak of vitality and effectiveness, then declines into extinction or oblivion. Spengler commanded attention chiefly, however, in his insistence that a like fate — perhaps in three centuries — awaits our own period. Earlier cultures can be shown to have followed the pattern he described, and certainly the present culture, struggling against wars and a rising tide of the Caesar spirit, is exhibiting symptoms which he declared characteristic of the final phase. Regardless of whether Spengler need be taken seriously — and this is certainly a matter of choice, in view of the failure of everyone else to show a mastery of the historical principles Spengler claims to exist — it is apparent that our period is not quite following the formula. In its widespread educational practices and in its methods of organized research, for example, the present era is showing unique traits that might easily upset Spengler's melancholy meditations, the potentialities of cyclotrons and institutions for the study of sociology being what they are.

Howbeit, several conditions in this civilization have for a considerable number of years been devoid of any rosy glow. Prominent among them is the course of coal production. Strictly speaking, it is not the coal which is important, for by itself coal is merely the basis of one among many large industries. Coal output, however, is still the best single indication of energy consumption, and energy consumption is as nearly fundamental an index of the Western world's material health as can be found. Of the substances which we exalted beings, the inheritors of the industrial revolution, require to maintain ourselves in our present unique manner, only water and air are used in greater quantities than is coal. During a normal year, for example, that statistical abstraction called the average American consumes or causes to be consumed some 30 pounds of textiles, 250 pounds of paper, 600 pounds of steel, 2,000 pounds of food, 2,500 pounds of oil products, and about 7,500 pounds of coal.

Statistics show, or did until the second world war blacked them out, that the Englishman uses even more coal than does the American (although far less oil) and that Germans, Belgians, and Dutchmen are not far behind in their need for the mineral. Previous to the cataclysm, the United States, Germany, Great Britain, France, and Russia mined 80 per cent of the world's coal. As a rough guess, that percentage was not far from the share they held in the world's wealth and influence. Because the world obtains three-quarters of its energy needs from coal and in the past has produced an even

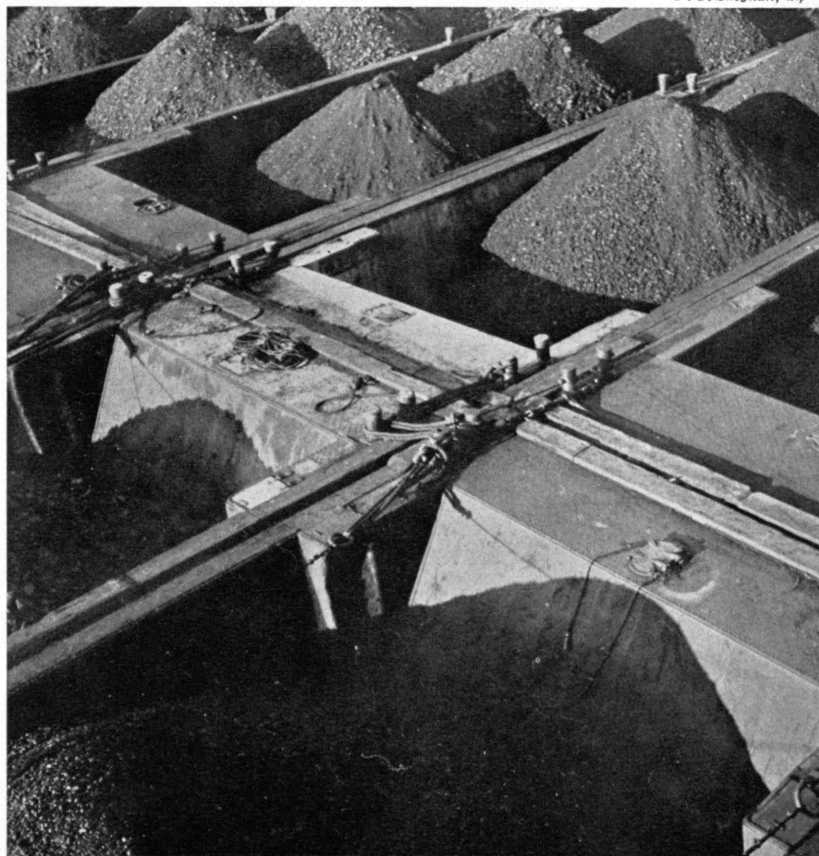
larger share of energy from this source, it mined 18 times as much coal as iron and 1,300 times as much coal as copper between the years 1800 and 1931. The point which these figures illustrate is that, among the many unique characteristics possessed by this mechanical age, none is more remarkable than its colossal appetite for power. Amply supported by history and the course of the present war is the view that coal is as important as all other minerals combined; that regardless of what other raw materials may be lacking, a country with ample coal reserves is halfway to being self-sufficient.

Certainly no drastically different presumption can explain the rise of England to a supreme position in the economic world. Except for the spirit and ability of her people and her rich iron ores (now badly depleted), Great Britain had few stronger aids in her climb than the quality and accessibility of her coal mines. Even their location close to tidewater had great significance by allowing their output to be moved at low cost, thus giving the United Kingdom an unchallenged first place as an exporter of coal.

At the other extreme is Canada, which, with considerably greater reserves than has Great Britain, must import 10,000,000 tons of the fuel annually, for Canada's mines are mostly in the far west or in the Maritime

Coal barges on the Monongahela

F. G. Skeyhan, '24



Provinces, thousands of miles from the centers of population in Ontario and Quebec. Fortunately for Canada, the latter provinces are richly provided with water power and are also only 500 miles from great coal fields belonging to her friendly neighbor to the south.

In a more precarious position is Italy, which at the moment must obtain practically all her coal over the four railroads crossing the Alps into her territory. Even the Italians do not believe that she can thus make up for the 10,000,000 tons of coal she formerly obtained by sea. As the American railroad situation shows, neither German nor Italian efficiency is impugned by this failure. A third of the tonnage, from apples to zinc, that moves over American rails is coal.

If one crowning example of coal's dominant role in an industrialized civilization were to be chosen, however, it would be the importance of coal's impurities. Like a hair from the head of Buddha, even 1 per cent or less of a chemical found in coal can assume significance. The amount of sulphur in coal ordinarily runs to 1 or 2 per cent, but Germany in 1939 was able to recover from the chimney gases of her power and coking plants a total of 80,000 tons of sulphur, a large part of her needs of that element. The figure is not particularly surprising when it is considered that some power plants burn as much as 1,000 tons of coal a day and that the chimneys of New York vent some 2,000 tons of sulphur dioxide into the city's atmosphere on a cold winter day. Were it not for this country's unsurpassed deposits of almost pure sulphur on the Gulf Coast, the United States, like many a European nation, might also find necessary and quite practical the exploitation of this mine in the sky.

Actually, sulphur is a minor by-product of coal. Far more important are the tremendous quantities of coal gas, liquid fuels, solvents, and, with further processing, explosives, dyes, perfumes, plastics, medicines, and so on indefinitely, which are recovered from coal. The only reason that the synthetic chemical industries of the United States are not so completely dependent on coal as are those of Germany and England is, again, the natural wealth of the North American continent, which lavished raw chemicals on oil fields and refineries.

Because some varieties of coal yield three pounds of tars, liquids, and gases for every ten pounds of raw coal fed into the coking ovens, the United States in 1936 obtained from coking plants more than 100,000,000 gallons of benzol, a fuel suitable for aviation and motor use; 20,000,000 gallons of toluol, vital for the explosives industry; 1,000,000,000 pounds of ammonium sulphate for fertilizers; 50,000,000 pounds of ammonia; and 560,000,000 gallons of tar. Only Americans can yawn at such figures, and then not too widely, for to countries like England and Germany, whose need for fertilizers is sharper than ours, whose oil wells do not drown their markets with an overabundance of liquid fuels and solvents, and whose inhabitants are barred from natural fats and rubber by the exigencies of war or trade, the chemical possibilities of coal are large factors in the ability to survive. Yet the by-products of coal are minor by comparison with its main product — power.

Freeman Hunt called steam the great civilizer. Living in a more cynical age, we may have our doubts, but certainly steam and other forms of power derived from

mineral fuels are basic to our present form of culture. When energy was derived from human and animal sources, or from wind and water on the small scale possible in the pre-industrial era, two insurmountable obstacles faced all efforts to raise production materially. One obstacle was the inability to procure power that was cheap in terms of human effort; the other was the inability to concentrate great amounts of power into limited areas. Whether obtained from freemen, slaves, or animals, muscular energy is expensive. As the plantation owners of the South could have discovered had they been scientifically inclined, most of the food absorbed by animals, including *Homo sapiens*, is spent merely in keeping the organism alive. The gross profit associated with slave labor is invariably and sadly reduced by the costs of feeding, clothing, housing, nursing, and burying the creatures.

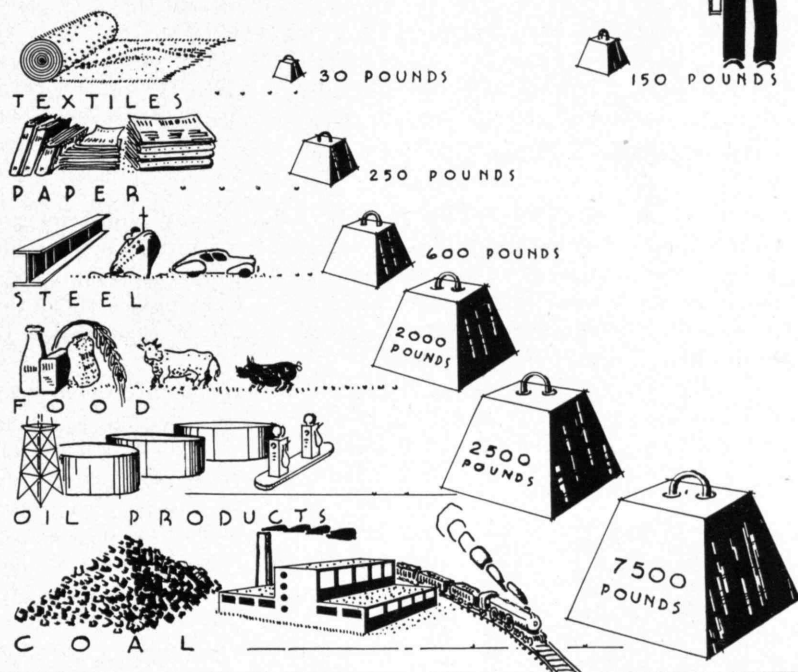
A mechanical horsepower costs from \$20 to \$50 a year and in many ways is more effective than the equivalent ten or fifteen slaves. Huge amounts of mechanical power can be concentrated into small areas and controlled with eye-widening precision — certainly no human muscles could actuate a modern continuous-strip mill. Mechanical power is also free of such human failings as boredom or carelessness, and can perform automatically, tirelessly, and uniformly for indefinite periods. Slavery, therefore, was the first victim of technological unemployment.

These are the reasons that have caused an expansion in the use of energy to accompany or, more accurately, to precede a rising standard of living. They explain why economists attempt to compute, with more enthusiasm than accuracy, the human equivalent of the per capita horsepower which various nations possess, the bolder spirits claiming that therein is a valuable clue to the cultural level of the nations. Incidentally, estimates of per capita power for this country range from the equivalent of 35 to 150 mechanical slaves, on which basis the United States is four times richer than peacetime Great Britain and six times better off than peacetime Germany. Such ratios are deceptive, however, because they are distorted by the enormous but little-used capacities of our automobile engines. It is more nearly accurate to compare energy consumptions, by which measure the United States is 50 per cent better off per capita than Great Britain and about 100 per cent ahead of Germany. Regardless of the precision of such figures, however, they serve well enough to indicate the advantage of a modern citizen over a citizen of Classic Greece, who had on the average no more than five Helots to insure him his leisure and luxuries.

Naturally, production is not merely a matter of power. Vacuum tubes, time studies, paper clips, alloy steels, adding machines, and the hundred thousand other products of technology also play their roles. Yet while it is impossible to evaluate precisely the part that energy plays in permitting a laborer at Boulder Dam to work thirty times as effectively as a slave on the Pyramid of Cheops, the use of power in large amounts is one of the fundamental differences between the two civilizations these structures symbolize. If the soul of technology feeds on research, its corporeal existence is maintained by energy consumption — or, largely, coal output — and

ONE AVERAGE AMERICAN

IS RESPONSIBLE FOR THE
ANNUAL CONSUMPTION OF . . .



Martin Rosse, '40

but these are rather miserable achievements when compared with previous performances. Only as we note that coal output, for the fifty years preceding 1913, had been increasing steadily at the annual rate of 4.4 per cent (four times faster than the population and enough to double production every sixteen years) can the abruptness and magnitude of the break be appreciated. A few areas, either through the normal spread of industry over the world or the efforts of governments with ambitions of self-sufficiency, continued to increase output during the post-War period — Soviet Russia is an example — but for the entire world the trend of per capita coal output, until the temporary stimulus of armament production appeared, was definitely downward.

To those aware of the substantial progress which has occurred in the use of hydroelectric and oil power and mindful of the increasing efficiency which marks virtually every phase of present-day production, an obvious but fundamentally incorrect explanation may spring to mind: Coal's ills are purely its own; like

those of the horse and buggy, they are the result of technical obsolescence. Quantitative comparison of the data, however, indicates that although water and petroleum power have been making their greatest gains during the period when coal output has been static or declining, and although industrial efficiency has been stimulated not only by normal advances in technology but also by many financial and labor conditions, neither individually nor collectively have these three factors made available the energy that would have been provided had coal production continued to grow at pre-World War rates.

Since about 1910, when the emergence of electricity as a major aid to industry enabled factories to utilize the power of distant waterfalls, the capacity of hydroelectric plants has been doubling every eleven or twelve years. Nevertheless, water power remains a severely restricted source of energy which, even if fully developed, would still not supply more than a fifth to a quarter of this nation's needs. Its share today is still under 10 per cent. Water power has taken over some of the market coal might have had, but only to a negligible extent has it interfered with the growth of coal production.

Petroleum and natural gas are not so easily dismissed, for in 1928 they accounted for 17 per cent of the world's energy and today produce a larger percentage. Yet while crude-oil production grew from 1,000,000 tons in 1871 to 211,000,000 tons in 1929, then, more slowly, to 295,000,000 tons in 1939 (world coal output in 1937 was over thirteen hundred million tons),* (Continued on page 225)

Those are the facts; here is how the coal statistics compare: In 1740, with coke already being used in blast furnaces, with Watt's steam engine still to be, Great Britain mined 5,000,000 tons of coal. By 1800 production was about 10,000,000 tons. Forty years later, she was mining about 35,000,000 tons annually, a sevenfold increase in a century. As the Nineteenth Century closed, Great Britain's production mounted to 220,000,000 tons and continued to rise to a peak not in 1937 or 1929 but in 1913. Today her peacetime production is back again at the levels of the early 1900's, a pattern that is characteristic of other countries. Although Germany tripled her consumption of coal between 1886 and 1913, she too has never exceeded the 1913 figure. In the United States, a very mild exception, production increased from 2,000,000 tons in 1840 to 445,800,000 in 1910 (she assumed world leadership in 1899-1900) and then continued to an all-time peak in 1918. Today, as in Great Britain, production is back at the levels of the early 1900's.

Thus, for the world as a whole, the Augustan era of coal production came to an end in 1913. The boom year of 1929 saw a higher output and so, probably, did 1937,

the relation is evident throughout the last two hundred years of economic history, that is, throughout the life of this technological civilization. Great Britain, the prime example, first felt the industrial revolution around 1750 and maintained her economic supremacy certainly until about 1900, at which time the United States and Germany emerged as serious rivals. In the years that followed the World War, Great Britain did not regain her previous position nor did the world again enjoy the strong growth it had shown prior to 1913.

Since about 1910, when the emergence of electricity as a major aid to industry enabled factories to utilize the power of distant waterfalls, the capacity of hydroelectric plants has been doubling every eleven or twelve years. Nevertheless, water power remains a severely restricted source of energy which, even if fully developed, would still not supply more than a fifth to a quarter of this nation's needs. Its share today is still under 10 per cent. Water power has taken over some of the market coal might have had, but only to a negligible extent has it interfered with the growth of coal production.

Petroleum and natural gas are not so easily dismissed, for in 1928 they accounted for 17 per cent of the world's energy and today produce a larger percentage. Yet while crude-oil production grew from 1,000,000 tons in 1871 to 211,000,000 tons in 1929, then, more slowly, to 295,000,000 tons in 1939 (world coal output in 1937 was over thirteen hundred million tons),* (Continued on page 225)

* Crude oils have higher heats of combustion (about 19,000 British thermal units a pound) than do coals (in general about 10,000 to 14,000 British thermal units a pound).

Housewife and Art

*Excellence in Each Depends on the Same Group of Qualities—
By These Standards Much in Modern Design Is
Found to Be False in Idea*

BY ROBERT C. DEAN

CAN it be that, while vast controversies on basic aesthetic principles rage among the devotees and practitioners of art, one vital precept has so far remained unnoticed? Can it be that this principle is the one most sought by the public? Several aesthetic maxims are generally accepted as valid by the majority of practitioners and critics alike: pleasing proportion, unity of scale, interest in texture, and interest in color. All the objects which have been almost universally accepted as beautiful have had these qualities, but there is another

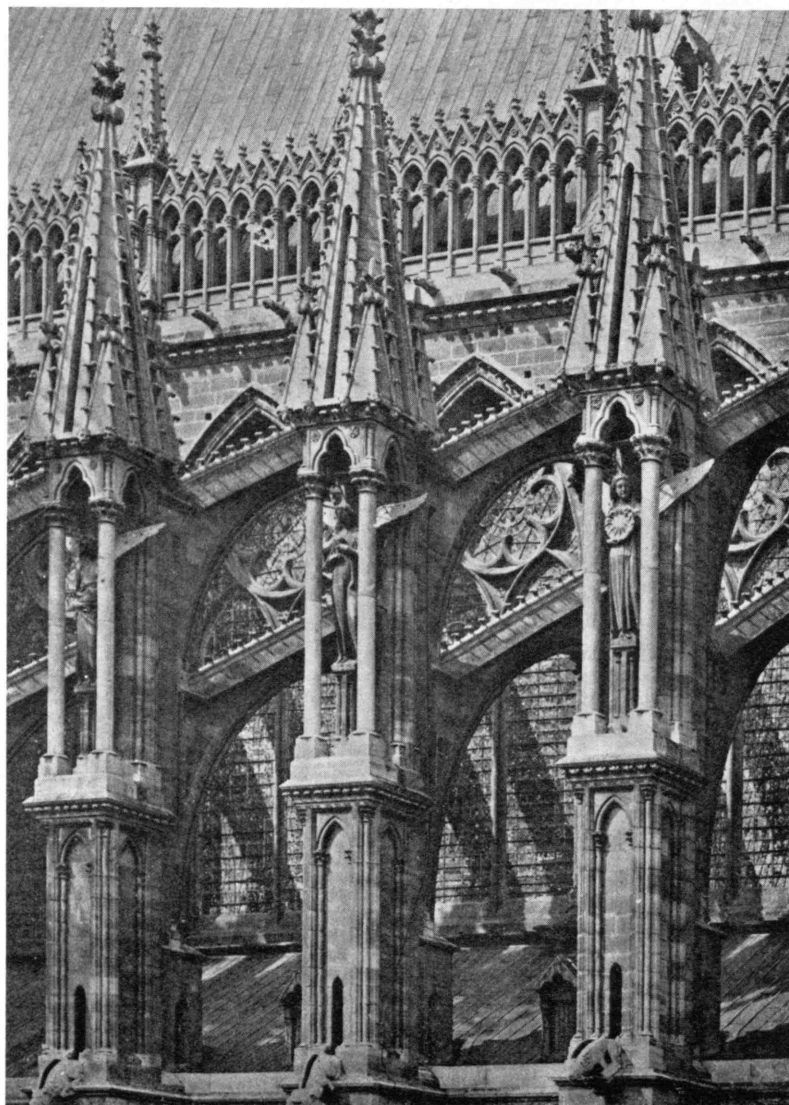
attribute which must be found in any object for it to achieve wide popular acclaim. For want of a better name, this attribute may be called visual functioning. Man likes to see how things work, what makes them tick, what makes the wheels go round, or what makes the parts hold together.

When recognized by the artist, this interest in visual functioning can be exploited in the shaping of his art, so that popular esteem can be caught and held. This aim of course flies in the face of those who contend that

art is not popular, that the people is a great beast with no appreciation of the finer things. To disprove such a theory we have only to remember the great popularity of the work of the Greek, Medieval, and Renaissance architects, sculptors, and painters, and of the German musicians.

Popular favor has always been enjoyed by the art of great periods despite the failure of some individual works to achieve it; its attainment should be the goal of all who practice any form of creation which can be seen or heard by man. Consider for a moment a few achievements of our own times and country. No one escaped that peculiar thrill which quivers the spine, that celestial happiness, that feeling of individual well-being and power which are symptomatic of aesthetic experience when he saw under full sail one of the great clippers of Donald McKay racing up from the Horn. A person would have to be dull indeed to remain unmoved by the sheer beauty of Brooklyn Bridge, of the George Washington Bridge, the Triborough, or the Golden Gate, newest and greatest suspension bridge of them all. Who has escaped the sharp surge of emotion when a great transport roars overhead and disappears in the mists of the horizon?

Many will claim that these emotions are not caused by works of art. But what, pray, is a work of art? Is it not anything which will create in the beholder emotions here described? Anything which can evoke them is beautiful; art's main purpose is to create beauty. Why, then, are these three objects—the clipper, the bridge, and



"... No mere ornament . . ."—buttresses of
Rheims Cathedral

the airplane — so much acclaimed for their beauty? Firstly, they represent the works of some of our finest brains, just as Greek sculpture, Gothic architecture, Renaissance painting, and German music represented the best brains of their times. Secondly, the beholder can see and feel how the objects function. The designer of any of these objects has to deal with forces which permit no overloading, no useless parts, no pants or skirts put on for supposedly aesthetic effect to disguise supports. He has of necessity to work with useful parts and with none other. He strives for grace, neatness, proportion; in fact, the very qualities which constitute a good housewife are those which he uses to make the work of art. Compelled by this instinct to achieve beauty, he must make working parts graceful. Wishing to suggest power or speed, he must shape his whole object so that the impression of speed is there. As he needs to suggest strength, his parts — though fragile — must be arranged to inspire confidence. That he succeeds is too well attested to need exposition, for here is the beauty of working parts combined into a functioning whole, each part having its own beauty, and the whole having unity, scale, proportion, and grace.

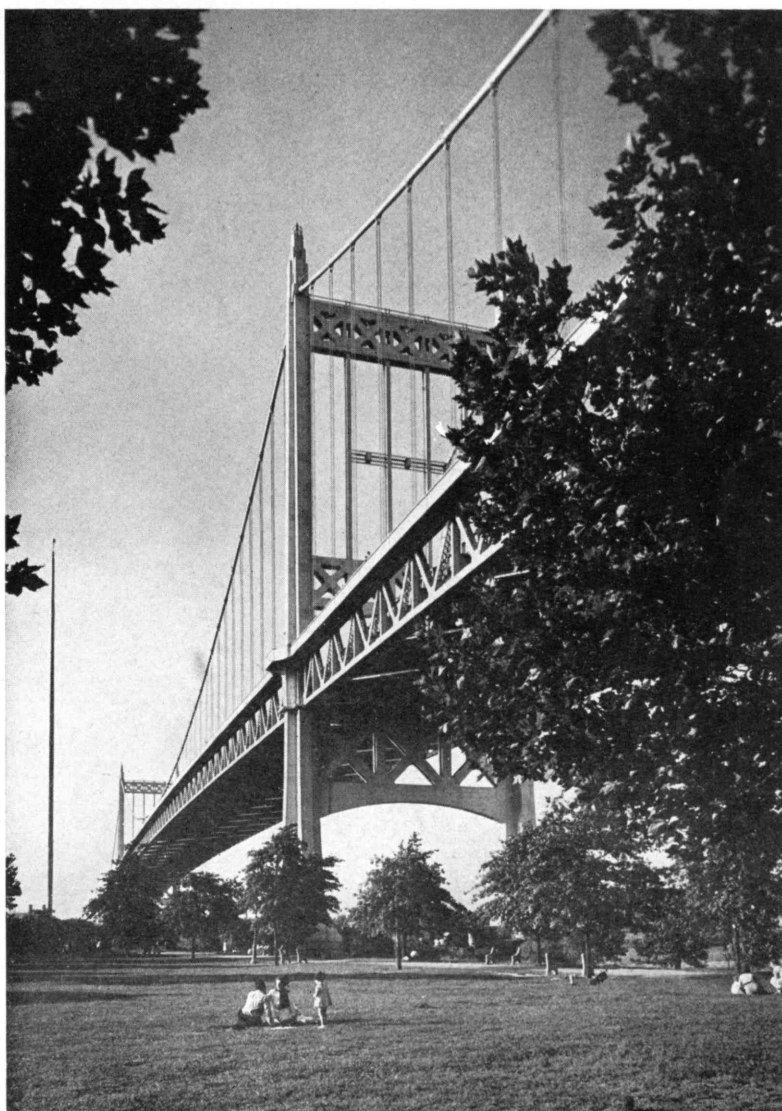
The greatest periods in architecture — at least by the criteria set up here — have been the Greek and the Gothic. They were and are popular not only with the masses but with scholars, artists, and the gods. In both these architectures the functioning of the structure is visible; the working parts show. The Greek column is nothing but an ordinary post, well understood by the layman. It has been refined to the utmost by great architects, but never have they disguised the fact that it is a post, nor have they ever, with the exception of the rare caryatid, attempted to use for this purpose any unpostlike form. The entablature is merely the commonly understood beam, refined and proportioned. The cornice is simply a watershed; the triglyphs, beam-ends. Thus the Athenian citizen walking on the Acropolis could see and understand how the stresses caused by weight and wind were carried to the rock on which he stood. Being conscious of the stress and weight of his own body, he felt a spirit of kinship with the building before him and, feeling thus, was made more receptive to the beauty of its form.

Finest example of visual functioning as a means to popular beauty is Gothic architecture. Any observer of this great art in its original form can feel the sheer joy of its creators. Gothic architects were men who were using to the fullest the skill of their hands, the cunning of their brains, the expression of their emotion, and the accumulated knowledge of their time. Their happiness in their work, their sense of its

fitness, of its use to humanity, and of its acceptability to God are powerfully transmitted to us by their creations, be they great cathedrals or humble dwellings. In Gothic architecture we have a great structural invention, consisting of the arch, vault, and buttress, carried to a logical conclusion. Here we see the possessor of the inventive mind throwing his vaults ever higher and wider until the ultimate strength of his material is reached. Fortunately for his spiritual happiness, this obvious end was reached almost at the same time that the public need for his services collapsed.

The most characteristic exterior form of a stone Gothic building — the shape which dominates and, even more than the tower, means Gothic — is the great buttress. This is no mere ornament. It is an essential of the skeleton of the whole building. The artist has embellished, he has proportioned, he has modified, but he has never disguised it. Its enormous variety demonstrates his love for it, his imagination in its use, and his masterly knowledge of its powers and limitations.

Internally, also, the building is alive. The great arches, forming ribs, support the vaults and are in turn supported by the piers. Through properly placed clear



"... Useful parts and ... none others ..." —
the Triborough Bridge

glass windows the great external buttresses can be seen butting, the arches pushing, and the piers supporting. This spectacle is what is so fascinating to the public: beautiful forms working, arch thrusting against pier and buttress, pier and buttress resisting arch — all in a harmonious whole. Window glass, a necessity in this northern church, has been carried to its ultimate beauty. Nothing created in glass before or since is so fine as the beauty of the blue windows at Chartres; yet they are and always were just fillers for openings intended to let in light and to keep out weather. Their beauty in no way interferes with their function, nor does their function interfere with their beauty.

Such unity of purpose is understandable; it gives a feeling of spiritual satisfaction and is, therefore, popular. Page after page could be written on this marvelous Gothic art. In the exposition of every part, from the topmost pinnacle of the spire to the great platform on which the building is built, will be found this same remarkable unity of function and beauty. The whole period is one of visual functioning triumphant.

Just as these products of man's art are universally accepted as beautiful, so there are forms in nature which he popularly acclaims. Man himself is regarded as most beautiful when his functioning is visible and the working forms beautifully proportioned, colored, and textured. No man — or woman — is considered beautiful when

layers of fat obscure the line of the jawbone, the set of the hips, the functioning of the muscles. Not only must he be well proportioned, pleasing in color, and fine in texture, but the functioning of his body must be seen or suggested in order for his beauty to receive popular acceptance. This combination is one reason for the popularity of female beauty. The unity of function and its expression is so apparent in her face and form that it strikes the beholder full force, immediately capturing his imagination and enslaving his emotion.

Among the animals, beauty is popularly attributed to dogs, cats, antelope, and birds; ugliness to pigs, hippopotamuses, whales, Gila monsters, and many fish. The ugly ones are those whose forms are not well proportioned or whose function is concealed by their forms. There is no reason why the pig should not be held in as great affection as the cat. Surely the pig is more useful, but we cannot watch the ripple of his muscles as he leaps over his trough, or see his claws go in and out, or revel in the grace of his movements as he roots up the peanut patch. Ugly plants are rare. Nature here combines all her efforts to produce visual functioning. All the beauty in the plant world was not created for the enjoyment of man. Man has found it beautiful according to his own standards, one of which is his ability to see it function.

In this attribute of beauty the strongest case can be made against Modern design. On the desk is a stapling machine — a simple enough tool. Its purpose is well known. Some industrial designer has played with it until now it looks like a streamline tricycle. It has no wheels, but it gives the same impression of streaking along at 240 miles an hour that the small child's tricycle gives. Here is not a beautification of essential form. Here is the grafting on of a stylistic trend that is rotten to the very core. Here is no understanding of the very essence of beauty or of creative control of aesthetic pleasure. Here is the product of a man, himself the product of a school of abstract design which is doing violence to the unity between form and function. Furthermore, the public does not want Johnnie streaking around the living room at 240 miles an hour, nor does it want Johnnie's tricycle to look capable of making that speed. Neither does the public want its stapling machines, its bicycles, or its houses to look capable of that speed. Man wants these objects to be beautiful. He may be momentarily deceived by some aesthetic fad, but not for long. Soon this streamline fashion will pass, and its appearance will be confined to torpedoes, aircraft, porpoises, birds, and greyhounds.

Even the streamline locomotive is not so dear to the heart as is the old puffer. This is no mere nostalgia: We could see the old-timers work. We could see the pistons push, the drivers drive, the safety valve blow, the smokestack smoke, and the brakes brake. These essential parts can be and often are beautiful. They were combined into a beautiful whole and (Continued on page 229)

"... Dear to the heart ... the old puffer. ..."



The Worth of the Initiative

The Doctrine of Limited Liability One of Many Shortcomings in the Affairs of Nations; the Moral Initiative Vital to Maintenance of Democracy

BY HENRY M. WRISTON

A POSITIVE idea can never be beaten by a negative one, even if the positive idea is weak and the negative one is potentially stronger, but the upholders of the positive idea must seize the initiative in order to be the masters of their fate. The world is now suffering because the democracies yielded the initiative to the dictatorships. The democracies took defensive positions and, operating under a philosophy symbolized in the military sphere by Liddell Hart, applied the doctrine of limited liability not only to military operations but also to political strategy.

The false sense of security which persisted while the military initiative was abandoned and the Allies rested behind the Maginot line has now been shown to have been folly. The military mistake, however, was preceded by an identical, but even more serious, error in moral and political strategy. This consisted in a like abandonment of initiative to the totalitarians. It is now being followed in Europe and in America by an error of similar character and dimensions in still another field — the abandonment of the peace strategy to the totalitarians.

The Versailles Treaty was not a good treaty, but it was probably as good a one as is likely to be made at the close of a long, bitter, and exhausting war, by statesmen whose first preoccupation is certain to be continuance in office. Though it was not a good treaty, it was, nonetheless, a better treaty than it is now given credit for having been.

Through the years the treaty became progressively less viable. Its evolution in action was degenerative, partly because of the negative philosophy and action of the United States. The failure of the United States to participate in the tripartite treaty of guarantee destroyed one of the presuppositions of the Versailles Treaty. The failure of the United States to participate in the Reparations Commission (though twice later we had to intervene "unofficially," with the Dawes Commission and the Young Commission) impaired its value as an instrument of flexible peace. The failure of the United States to participate in the World Court deprived the treaty of a third of its potentialities for peaceful change. The failure of the United States, which had launched the League of Nations, to take a positive attitude toward it contributed to its ineffectiveness as an agency for peaceful political reorientation.

Instead of developing into an instrument of positive action, which it might have done, the treaty by this negative policy became a kind of Maginot line, strongly defended toward the front but open to a flanking movement which made its defenses useless. The way for a

German flanking movement was prepared by many in Britain and many more in America whose destructive criticisms of the treaty were not balanced by positive alternative proposals. The criticisms by which the moral position of the treaty was destroyed were the same in the three countries — but with this difference: The Germans had a positive substitute for the treaty, whereas the United States and Britain paved the way for that substitute by participating in the moral abandonment of what already existed without offering any substitute of their own. We participated, that is to say, only in the work of destruction. The unworthy positive idea of the totalitarians — reform of the treaty by force — prevailed over a negative attitude. The available positive ideal of a flexible peace, inherent in the treaty as drafted, was lost because of failure to retain the political and moral initiative.

When the moral position of the treaty had been destroyed, the Maginot line of peace was turned, and mobile forces of political intelligence were not available for effective resistance to the German program. Once the moral initiative with regard to the structure of peace was conceded, the overthrow of peace was only a matter of time.

In the same way the moral initiative has been abandoned to the totalitarians in discussions of democracy. The "failure" of democracy, at least its failures, have been scarcely less the theme of public figures in France, Britain, and America than in the totalitarian countries. We have had over ten years of emphasis upon the pathology of democracy, with some evidence of consequent hypochondria. The "failure" of democracy to provide security, the "failure" of democracy to solve the unemployment problem, the "failure" of democracy to redistribute wealth, "failure" in a hundred other ways have been exploited by Americans and British as much as by Germans.

One recent British author, who is much and widely admired in America, in writing on the strategy of peace makes the flat statement that "the character of our political institutions contradicts the possibilities of our economic achievement." That statement is characteristic of the defeatist point of view, which goes a long way toward admitting the strictures of the totalitarians. The criticisms of the last decade have been so completely negative that when the physical assault upon democracy was made, whole areas of the ideal were already in process of being abandoned; they had already been conceded to the aggressors, and needlessly conceded.

The critics of democracy have proceeded on the fallacious assumption that specific failures were due to inherent weaknesses of the democratic process rather than to ineffective instrumentalities and leadership. They have measured the achievements of democracy against Utopian perfection, not against standards applicable to a real world. Instead of taking the initiative and driving home the weaknesses of totalitarianism and exploiting the positive aspects of democracy, the "defenders" of democracy have admitted its weaknesses and confined themselves to defensive gestures against the totalitarians. Statesmanship, which had become defensive about democracy, attempted to intrench it behind the moral equivalent of the Maginot line, then watched helplessly while that line was outflanked and overwhelmed.

In the same manner the initiative has been conceded to the totalitarians in discussions about capitalism. Capitalism has not been discussed from a positive point of view during the last decade by statesmen anywhere in the world. It has not been aggressive in its assaults upon the theory of exchange control, upon the theory of barter, upon the theory of state socialism. The initiative has been left to Russia, to Italy, and to Germany, and their assaults upon the plutocracies, their sneers at alleged outworn aspects of capitalism, have been merely the echoes of negative domestic criticisms in the nations where capitalism has thus far survived. Even there its ultimate modification out of all recognition is conceded not only without a struggle but virtually without effective argument.

Characteristic of this defeatist point of view is the British writer previously quoted, who speaks of "the central contradiction within itself between capitalism and democracy. . . . Their relationship is satisfactory in periods of economic expansion; it becomes difficult in periods of economic contraction." That statement, typical of the luminous and arrogant simplicity with which the alleged breakdown of democracy and capitalism is described, says in elaborate words that trouble is trouble — and unpleasant. One can read his whole argument through, however, without encountering any hint that Russian communism has been anything other than a glad, sweet economic song — except as its capitalist neighbors have abused it! His is the kind of mind which shuts itself resolutely to any manifestation of privilege except that of wealth. The whole Hitlerian arraignment of plutocracy is tacitly accepted. Denouncing, as do most of us, the special privileges that often come with money, he closes his eyes to the special privileges that come with political power in a communist bureaucracy. Denouncing, as all of us would, the economic authority of any little group of capitalists over the welfare of masses of men, he resolutely closes his eyes to the power of life and death exercised over the masses by the dictator head of the totalitarian communist state. He blandly insists that democracy, to be effective in the current crisis, must "take large steps toward the transformation of the capitalist basis of its economic foundations to a Socialist basis." This widely acclaimed book, describing where we are to go from here toward peace, surrenders one whole area to the totalitarians without firing an intellectual shot.

The same author, who is characteristic of many more, closes his eyes resolutely to the development of dictatorship in Russia and has relatively mild words of condemnation for the manner in which Stalin has played the game of power politics. He assumes a fundamental difference in orientation between dictatorship in Moscow and dictatorship in Berlin and Rome. He assigns to the dictatorships of Hitler and Mussolini the characteristics of an outlaw but attributes to the dictatorship of Stalin the implementation of the dynamic of the masses. As he describes, step by step, the terror and tyranny by which the Nazi and Fascist masters made their wills dominant over their states, he is blind to the precise parallelism of means and method that marked the rise of tyranny in Russia.

Despite the suave phrases of such apologists, socialist or communist totalitarianism makes democracy impossible. Bureaucracy never submits even to phantom elections; bureaucracy never takes on the mortal release of death, which even the dictator can never escape. Bureaucracy, which is the essential instrument of totalitarianism in its socialist, communist, or any other form, is of all forces the least responsive to the popular will.

Let us repudiate the defeatists. Compared with totalitarianism, democracy has no need to be defensive. The inherent weaknesses of the totalitarian state are decisive. I shall mention only four and shall offer but a word on each.

(1) Totalitarianism means physical impoverishment. There are no vitamins in guns, and when guns are put before butter long enough, such a policy must exact its inevitable physical toll. But propaganda screams the word "equality," and the pretense is made that if the sacrifice be common, then there is no sacrifice at all.

(2) Totalitarianism means economic impoverishment. A nation's main productive forces cannot be turned into destructive channels over a long period of years, energies cannot be put into fashioning things which produce no dividends in goods, money cannot be spent upon a scale which taxation can never meet, without resultant economic impoverishment. But again the emphasis in propaganda is upon "equality," and by a strong assault upon alleged plutocracy, it again makes the false pretense that common sacrifice means no sacrifice at all.

(3) Totalitarianism means intellectual impoverishment. Bureaucratic control is necessarily hostile to intellectual freedom. There is no mind that betrays less evidence of imagination, there is no mind less inventive and in the long run less sympathetic, than the official mind. When the mind of science and the mind of literature and the mind of art are harnessed in team with the official mind, they inevitably lose that freedom, that sweep, that reach which have brought science its untold number of triumphs, which have brought richness and beauty and meaning and power to letters and the arts.

(4) Totalitarianism means spiritual impoverishment. For if the state is made one's god, the result is no better than if an idol were fashioned of gold or of clay. Even if power were not the inevitable objective, the baser life would be substituted for the fuller and richer life.

If control over others is substituted for mastery of oneself, the result is a loss for which nothing can compensate.

But, having crushed minorities, having purged dissidents, the totalitarian state insists it has achieved "unity." By inhibiting creative power outside official channels, by controlling every aspect of life, and by substituting a false enthusiasm for the state in place of reverence for God, the totalitarian state tries to make the world believe that the minds and hearts of men are one. If we are so inert in our defensive position that we do not seize the initiative, tear those pretenses away, and show all the forms of physical, economic, political, intellectual, and spiritual poverty which lie behind them, then our superior democratic ideal will never conquer the inferior totalitarian ideal which flaunts its bold claims.

The soundness of the military aphorism that the best defense is a strong offense is now obvious. It should have been clear from the beginning — at least after the German annexation of Austria had turned the Czech fortress line — that a defensive military position is untenable. If the immovable body does not crumble before the irresistible force, the force flows around it and achieves the same result.

It should be equally clear by now that a negative attitude cannot resist a positive idea, and that when the moral initiative, the intellectual initiative, and the physical initiative are surrendered, and trust is reposed in defensive positions, those positions will be lost, one after another, either from the front or, more likely, from the flank and the rear.

That is why it is so serious a matter to have abandoned thus far the initiative regarding the shape of the coming peace. There are current in the democratic world no theory of the peace, no aggressive principles which the peace is designed to implement, no clear picture of the kind of world in which we are ready to participate, no definition of the responsibilities we are ready to assume, no intimation of the structure of our own hopes. American pessimists have been as quick as the Germans to open the pathway through the flanking forest of the Ardennes by saying that free exchange is a thing of the past; by asserting that the gold standard, or anything like it, is a thing of the past; by declaring that free enterprise in the international sphere is a thing of the past; by admitting that small nations probably cannot maintain themselves; by anticipating in the future some hegemony within spheres of influence, such as is involved in the conception of hemispheric defense and hemispheric economy, or a partition of the world between the democracies and the totalitarians.

All these concessions mean that even if the totalitarians lose the war, they are likely to win the peace. Aid to Britain is no substitute for clear thinking.

The hope of peace is an old hope. In our greatest work of literature, the Bible, peace as an ideal appears again and again, always with yearning and sometimes with magnificent faith. The periods when the world has moved toward peace have been those when hope was reinforced by faith. Today, when even hope is dimmed and faith is all but absent, the totalitarian faith in conquest is for the moment triumphant and the totalitarians can define their "new order" while we flounder without a program. Our absence of faith in any contrary process gives them the victory. If we are ever to have peace, then more vital than guns, more vital than butter, is a reawakening of faith in the validity of our ideals — a resurgence of faith in the democratic process, a readiness to see those ideals and that process operate upon an international scale.

One of the ironies of life is the inability to have peace without being ready to run the risk of war. For peace is not an end in itself; it is a means to an end. It is the opportunity to fulfill some (*Concluded on page 229*)



© The Times, London

The Great Hall of the University, Bristol, England, after an air raid

The Humanities at Technology

A Wider Definition for Such Studies a Basic Element in the New Education Begun at the Institute in 1865; the Varied Course of Their Development

BY ROBERT G. CALDWELL

WHEN the Massachusetts Institute of Technology opened its doors in 1865, its new educational experiment was frankly revolutionary. The program of the American college at that time still centered on required courses in the classics. President Rogers had become convinced that with the rise of science and technology, a new type of education was definitely required. He had thought about his plan for many years and had published his first outline as early as 1846. For more than twenty years he had been dreaming and planning, and now his great dream had come true.

The new education was to be genuinely democratic: It would start with the practical needs of industry and life and not hesitate in its effort to meet those changing needs; it would emphasize learning by doing and would accordingly be based on actual laboratory manipulation by the students themselves; and it would give a new definition to the old and respected name "humanities" by including subjects like modern languages and literature, history, philosophy, and the social sciences — subjects which in his judgment might well be combined with professional subjects in a broad and generous effort to provide, as he said, "an education which might be not merely useful to the individual, but which in the course of time would furnish well-trained leaders for any branch of activity within the state."

His was an ambitious program and, as the years were to show, not without inherent difficulties. Nothing, however, had been left to chance: Every detail of the new program had been thought through, and difficulties had been foreseen not only with prophetic insight but with constant and meticulous care.

The first Faculty of only ten members included a full professor of modern languages and a professor of the English language and literature. In 1871, these two professorships in the humanities were increased to three by the appointment of George H. Howison as professor of logic and the philosophy of science. The first professor of English was William P. Atkinson, brilliant, witty, and effective, who continued to serve the Institute until his retirement in 1889, almost a quarter of a century after its foundation. Indeed, the continuity of the humanistic tradition has largely been guaranteed by the fact that three successive Heads of the Department of English altogether have had virtually an unbroken period of service lasting from the very beginning almost to our own day, and have therefore been in a position to maintain an ideal which might otherwise have been lost in the inevitable competition with professional demands.

The first President announced that the Course in English had "mainly in view the acquirement on the part of the students of a habit of clear, precise, and accurate statement of their thoughts upon paper." Similarly, "in the study of the Modern Languages, the practical purposes of men engaged in scientific pursuits will be kept in view." Hence these languages were not to "be cultivated as *accomplishments*." The aim was "to enable the student to read such works as may have a bearing upon the studies pursued in the School, — so that, in the latter years of the course, French and German textbooks may be used in any department, as well as English ones."

The Departments of English, History, and Economics have included distinguished names. After Professor Atkinson, already mentioned, the Head of the English Department from 1893 to 1915 was Arlo Bates, a well-known novelist and poet of his day. Professor George R. Carpenter, who later won a distinguished position as a philologist, was a member of the Department for some years, as was Professor Frank Aydelotte, now director of the Institute for Advanced Study. At various times special lecturers have been employed. The names listed in the catalogues include John Fiske; J. Franklin Jameson, for many years head of the manuscript division of the United States Library of Congress; A. Lawrence Lowell, later President of Harvard University; and Louis D. Brandeis, the distinguished jurist.

All these gentlemen found the task of teaching English to engineering students engrossing but obviously not without difficulties. In an early report Professor Atkinson outlined his policy in this respect: "I have taken the ground that while the Institute of Technology does not offer itself as a teacher of writing, spelling, punctuation and the rudiments of the art of composition, it will give all the incidental help it can to its students for the making up of such deficiencies in their school education, but should refuse to give a degree or diploma to anyone who, by the end of four years, has not acquired . . . a satisfactory proficiency in them."

Apparently, however, the difficulties of many students continued; for in 1890 and for many years thereafter when Arlo Bates was head of the Department, students in the required course in first-year English had to be divided into two groups. The first list included those who displayed "unusual aptitude and pleasure in composition." They were offered opportunities for advanced study.

As to the others, the report of 1890 continues: "More important still, lists will be made of those students, beginning with the very first year, who, from lack of

natural aptitude for such studies, or from defects of training, are found to be at a special disadvantage in English composition." These students were to be followed up with "an unremitting but friendly importunity, to induce and enable them to correct their faults and supply their deficiencies on this side."

From the outset, all regular students in the six professional Departments were required to take certain so-called general studies in addition to the elementary courses in English, history, and modern languages. For third- and fourth-year students the program of studies set in 1865 was clearly ambitious and, in contrast with the one which is in effect today, was rigidly prescribed without options. It included German and French; lectures on history, political economy, and the science of government; lectures on mental and moral philosophy; instruction in logic, rhetoric, and history of English literature; and instruction in zoology, physiology, and botany.

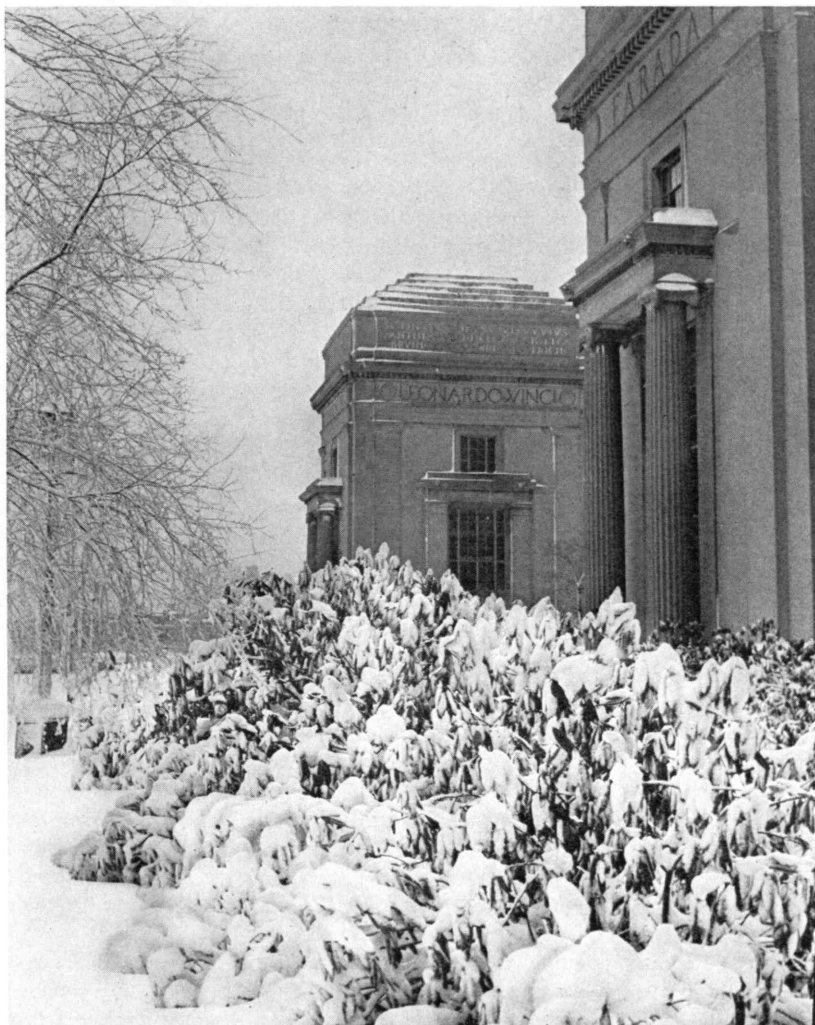
Early students must have been serious and hardy. At any rate, in 1875 the Professor of Philosophy was able to report that his third-year students had "thoroughly read the following matter: — Descartes' *Method*, and his six *Meditations*, entire; Spinoza's *Ethics*, in outline; Leibnitz's *Monadology*, *New System of Nature*, *Nature of the Soul*, and *Doctrine of a Universal Spirit*, entire; Locke's *Essay*, in its most important parts, with Cousin's Critique of the same; Berkeley's *Principles of Human Knowledge*, entire; Hume's *Inquiry Concerning Human Understanding*, — the first eight sections."

After the first two years, however, the early emphasis on philosophy proved no longer feasible, and we find that courses in philosophy were replaced to an increased degree by the social sciences, economics, comparative government, sociology, and international law. Some of these subjects were taught with brilliant success by President Walker during his long incumbency.

As time went on, a wide variety of choices was provided which led gradually to the list of General Studies as it stands today, including subjects as different as the history of science, psychology, and the appreciation of music.

From the very beginning, accordingly, all students being graduated from the Institute have had generous opportunities to become acquainted with methods of historical investigation and with masterpieces of literature in various languages. It is worth noting that the interest in philosophy, which decayed so rapidly in the Eighties and Nineties of the last century, has been renewed in our own time and that many students select such courses as Problems of Modern Philosophy and subjects in pure and applied psychology, which seek to explain the relations of science and human life.

For students who are busy with scientific and technical pursuits, one of the chief difficulties connected with any humanistic program has always been to find sufficient time for the generous amount of reading which is required. In the constant effort of the Faculty of the Institute to meet this need, a very interesting experiment was worked out in 1897 and continued with some interruptions until 1923, a full quarter of a century later. Under this plan all students except college graduates who were working for advanced degrees were required to complete courses of reading of a nonprofessional character during the summers following the first and second school years. The books to be read were to be chosen by the student himself from yearly lists, to the selection of which, it is quite apparent, much careful thinking was devoted. In the early years the books for summer reading were chosen by Professor Arlo Bates. Of various Presidents during this period, Richard Maclaurin was especially interested in a plan which was obviously similar to practices to which he had become accustomed in his Cambridge days and from which beneficial results have been obtained by many generations of English students. Professor Archer T. Robinson and Professor Robert E. Rogers, still members of the Faculty, later took a leading part in the selection of books and in conferences on reading done during the summers.



J. E. Tyler, '40

Is not the curriculum for the Ph.D. degree frequently too strictly confined to economic subjects, and should it not include a larger proportion of history, politics, psychology, philosophy, and jurisprudence? Is not a knowledge of American and foreign constitutional history an absolute requisite for understanding and interpreting the working of economic principles?

If there were this knowledge, it seems to me that some of our economic theorizing and writing would be more effective. I am not reflecting upon the scholarship of the present holders of the doctorate in economics, but I sometimes wonder whether there is not a tendency to narrow the preparation too strictly to the economic field.

May I now give a few words of advice to our new managing editor? (1) Be sure to have one article containing involved mathematical equations with unusual fonts of type. Inasmuch as the printer has to spend a good deal of time in ransacking the type foundries of the country, this affords you a good excuse for a delay in publication. (2) Be sure that a majority of the leading articles contain at least six references to John M. Keynes, Adam Smith, John Stuart Mill, Alfred Marshall, Francis A. Walker, and their contemporaries are now passé. And it is your duty to see that the articles you select do not burden the readers with reasoning which has been outmoded. (3) Publish at least one review in each issue which will arouse the animosity of the author. There is nothing more stimulating than controversy. Is not controversy the essence of that much-debated theme, democracy? In a recent address at Cornell University, Professor Carl L. Becker reminded his audience of a German saying that a professor is a man who thinks "otherwise." As I look back over the *American Economic Review*, I am inclined to think that this definition fits many of its contributing writers. There is a great deal of "otherwise" opinion. Some of the leading articles may be so characterized; and a reviewer appears to think that no matter how favorable his review is, he has not fulfilled his duty unless he injects an "otherwise" qualification. (4) Be sure to have occasionally an article containing fifty-cent and dollar words. Though difficult to understand, such an article commands respect; and economists in these days need respect. . . .

Age becomes casehardened and overconservative. I welcome the change to youth, and commend my successor to the same generous support which you have given me . . .

Finally, the benediction; fortunately a benediction is always short. May the blessings of wide scholarship and sound reasoning attend the remaining years of your lives.

Industry and the Emergency

DISCUSSING industry and the national emergency in an article in the current issue of the *Magazine of Cambridge*, President Compton expressed his confidence in the public spirit and capacity of industry to meet our national needs and to implement our national objective of serving as an arsenal of democracy.

"There has been," he said, "a certain amount of impatience over the rate at which the wheels of industry are turning in these grave days. Some of it, no doubt, has been justified, but more has been due to a lack of understanding of the factors involved in the enormous task of producing in quantities undreamed of a few months ago.

"In a few instances industry must learn to use unfamiliar tools in the manufacture of new products, but in general the problem is one of quickly increasing production. Here and there plant facilities must be expanded, but more often the problem is one of manpower and efficient utilization of existing equipment.

"There is a tendency in the excitement of the moment to lose sight of the fact that not all industries will be called upon to manufacture defense supplies. There is, perhaps, no more effective illustration of unpretentious patriotism than the manufacturer who calmly continues to produce with the utmost efficiency the necessities of daily life. In doing this he is contributing to the security of national morale just as effectively as his colleague who is engaged in the more spectacular task of manufacturing instruments of defense. . . .

"It was apparent early in this national emergency that there would be a shortage of technically trained men and skilled workers when defense production gained momentum. That need was anticipated by our schools and colleges in the far-reaching program of training now going on in our engineering schools, colleges, and thousands of high school manual arts departments and trade schools. This project has a significance far deeper than the immediate goal of training for defense work. It has opened to young men opportunities for technical training in the engineering professions and the highly skilled trades which otherwise might not have been so readily available. . . .

"It would be short-sighted, indeed, to think that industry had discharged its duty by supplying only the weapons and the supplies of defense. That is only part of the task of this national emergency. Beyond the horizon rides the sun that will mark the dawn of a day when we shall stack the instruments of war and pick up the tools of peace. What then? The answer is not an easy one, for the readjustments that will be necessary when that day comes will demand calm execution of a constructive plan which must be worked out long before the need for it arises. I am confident that out of the experience we gain in preparing our country for defense will come new and basic knowledge for such a plan and the wisdom to apply it for the economic security of all who value the right to earn our living as a free and happy people. The greatest danger of the moment is that the creature satisfactions of the artificial prosperity of defense production may lull us into a false sense of well-being. . . .

"To improve products and develop new ones requires research, a term that sometimes frightens people who do not take the trouble to investigate its true meaning. After all, research simply means providing for the future. Funds invested in research, whether it be a simple investigation or a complex, far-reaching basic study, are the best means of assuring progress in any technical field. Experience supports the statement that savings through research lead to prosperity by improvements in methods of manufacture and development of products that otherwise would never have been created. The company that is content to carry on as it always has are like the dweller in a valley who is too lazy or unimaginative to climb the hills to see what lies beyond. . . .

"At no time in the history of American industry has it been more important that research become part of the activity of every company. An enormous amount of research is now going on in the interests of national defense production and if we are to find a sound solution for the complex problems of the post-defense era, long-range research is vitally necessary. The question is not

whether a company can afford to do research, but whether it can afford not to. When the emergency has passed, industry will be faced with the task of finding a normal consumer market for its products to replace the government orders now being filled. Creation of this new market depends upon new and better products."

Six Historic Ships

AMONG the notable exhibits in the Francis Russell Hart Nautical Museum at the Institute are models of types of vessels associated with the discovery and settlement of the American continent. They are Leif Ericson's Norse trader, Christopher Columbus' *Santa Maria*, an English galleon of the Elizabethan era, Christopher Newport's *Susan Constant*, Henry Hudson's *Half Moon*, and Christopher Jones's *Mayflower*.

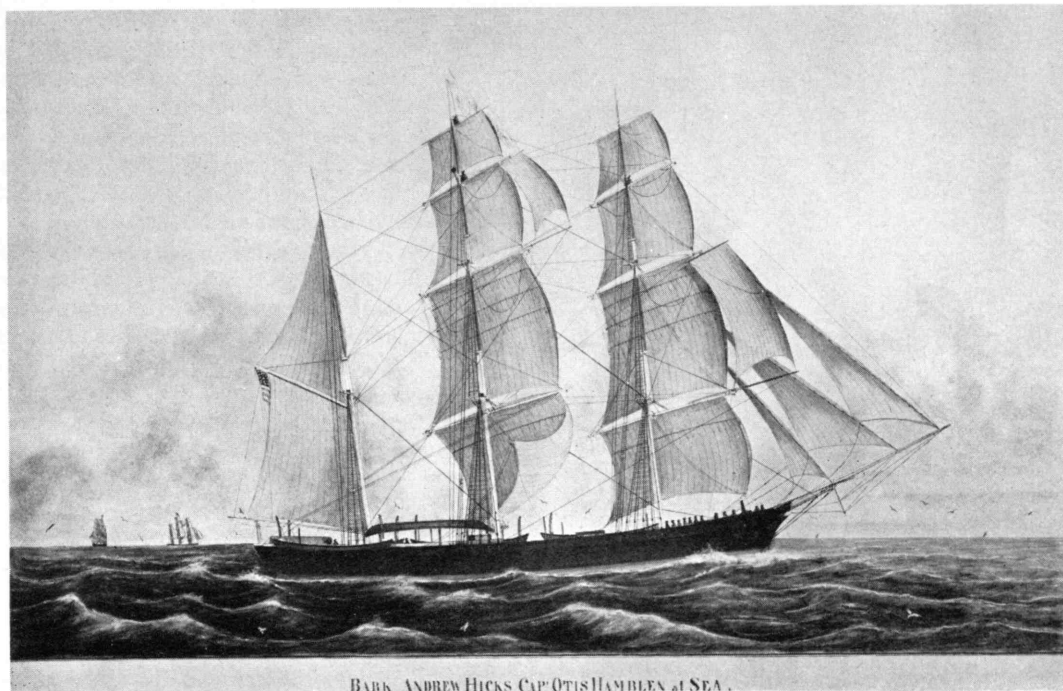
These fine models, all of which were built by James R. Jack, Professor Emeritus of Naval Architecture and Marine Engineering and Honorary Curator of the nautical museum, are now described in an interesting brochure in which Professor Jack comments upon their origins and their places in the early history of America. The models were built only after Professor Jack had done a great deal of painstaking research in this country and in England to determine the accuracy of the historical information on these vessels.

The model of the Norse trading ship follows the basic design of a group of early Scandinavian craft found in funeral mounds and now preserved in Oslo. These vessels were built considerably earlier than the time of Leif Ericson's voyage to Vinland, which is believed to have been the American continent, but as there was very little change in design in Scandinavian vessels in that period, Professor Jack believes that Leif's vessel was of

approximately the same type. The Oslo ships are very fine in lines and were intended primarily for rowing rather than for open-ocean work. As Leif Ericson's ship was a trading vessel, Professor Jack believes that it was considerably fuller in the lines and a more seaworthy craft, though it probably retained the high stem and stern typical of Scandinavian vessels of that era. Her rudder, for instance, would be on the "steerboard," or starboard, side as in the Oslo boats. The rudder on the Institute's model is decorated with a cross, a symbol suggested by Leif's introduction of Christianity to Greenland, and the figurehead consists of a scroll pattern similar to that on one of the Oslo ships. This vessel is an open boat with only a short deck at each end, and has for protection at night a tilt, or tent, supported on crutches. The sails of some of the Viking ships were very decorative, but in a trading vessel, Professor Jack believes, they were probably rather simple, usually of vertical stripes of different colors.

In building the model of the *Santa Maria*, Professor Jack was handicapped by lack of data as well as by many inaccuracies in such information as exists. His model was based on one built in Spain, after a study of Columbus' diary, and exhibited in 1892 for the four-hundredth anniversary of Columbus' voyage. Later research indicated, however, that the model was far from correct historically and probably represented a type of about a century later. Professor Jack has undertaken construction of a new model of the *Santa Maria* which is based on the research of R. C. Anderson and will follow the lines of the model made under Anderson's supervision for the Addison Gallery at Phillips Academy, Andover, Mass. The data gathered in this research indicate that the *Santa Maria* was about 64 feet on the keel with a length from stem to stern of 81 feet, a beam

This ship portrait of a New Bedford whaler was painted by Benjamin Russell of New Bedford (1804-1885). Though no genuine artist, Russell was painstakingly accurate, and his many works are important in the pictorial history of whaling. He painted not only numerous ship portraits, which were fashionable in the homes of ship captains and shipowners, but also sketches for many of the authentic and well-known lithographs of the whaling scene. There are seventeen original Russell water colors, the largest single group in existence, in the collection of whaling prints presented to the Francis Russell Hart Nautical Museum by Allan Forbes, Jr. This collection was gathered by Allan Forbes, Sr., who personally contributed some of the Russells; a few other Russells in the seventeen were added by the State Street Trust Company.



M. I. T. Photo

There are seventeen original Russell water colors, the largest single group in existence, in the collection of whaling prints presented to the Francis Russell Hart Nautical Museum by Allan Forbes, Jr. This collection was gathered by Allan Forbes, Sr., who personally contributed some of the Russells; a few other Russells in the seventeen were added by the State Street Trust Company.

of 27 feet, and a depth of $13\frac{1}{2}$ feet. Professor Jack remarks in his discussion of this vessel that it is quite out of the question to reproduce an individual ship accurately and that it is best to be content with an illustration of the type of her time and of approximate dimensions. He adds that had the *Santa Maria* been returned to Spain, her fame would have ensured a record which today would be beyond price, but her loss on Christmas, 1492, on the island now known as Haiti has left many problems for students of nautical history.

While the model of the Elizabethan galleon represents no particular ship, it is included as a type which may have visited Virginia. The model represents the largest vessel in the fleet which defeated the Spanish Armada in 1588, an event which had a profound influence on the political and religious liberties of northern Europe, England, and Holland, and through them of the American Colonies. The design for the galleon model was drawn from information found in a book called *Frag-*

ments of Ancient English Shipwrihty, one of a precious collection of naval material bequeathed by Samuel Pepys to Magdalene College, Cambridge, England.

A model of the *Susan Constant*, or *Sarah Constant*, is associated with the expedition which in 1606 followed Sir Walter Raleigh's earlier attempt to establish a colony in Virginia. Three small vessels brought the settlers to America, for in addition to the *Susan Constant* there were the *Goodspeed* and a pinnace called the *Discovery*. There is considerable doubt about the name of the largest of these vessels. Whether she was the *Susan* or the *Sarah* is still uncertain, and, too, there is evidence that her surname may have been *Content* or *Constance*. Only the name *Discovery* is agreed upon, for the second vessel may have been called the *Godspeed*.

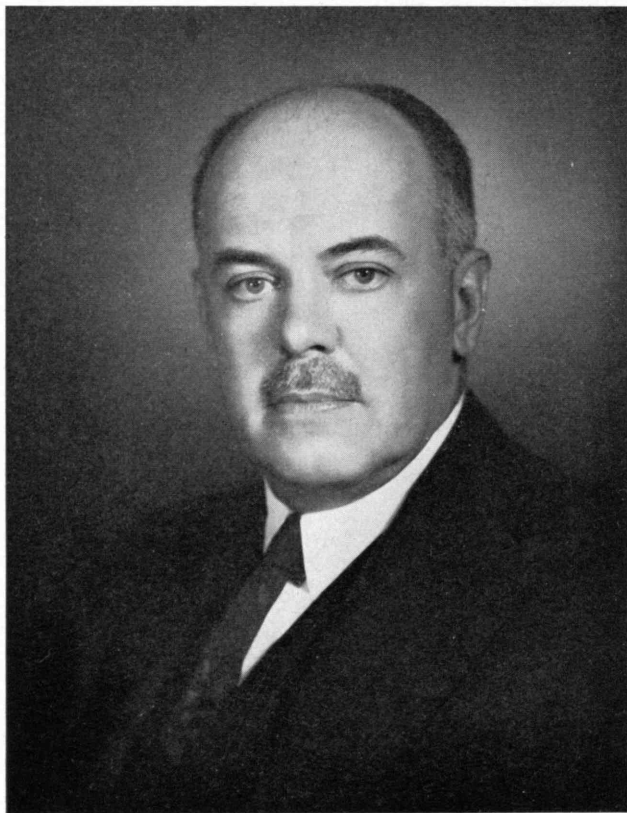
Drawing upon the history of this early expedition and much subsequent research, and with the knowledge of tonnage rules of the period, Professor Jack was able to deduce the principal dimensions of the *Susan Constant*. Her rigging, in all probability, he says, was that of a three-masted ship with courses and topsails on the fore- and mainmast and lateen on the mizzen, as well as a spritsail below the bowsprit.

Professor Jack paid particular attention to the flag carried by this vessel, for, he writes: "Owing to the continued friction between his Scottish and English subjects at sea, the King (James I and VI) ordered all British vessels to fly a union flag at the mainmast head. In addition, the English vessel carried the red St. George's cross on a white field at the fore, and the Scots carried the St. Andrew's silver saltire on a blue field. This order came out on April 12, 1606, and as this expedition sailed in December of that year it must have been among the earliest to carry the Union Jack, which then consisted of the crosses of St. George and St. Andrew only."

Henry Hudson's *Half Moon* was a little ship of the type which the Dutch called a "yacht," although she in no way answered the description of a modern yacht. Her length from stem to sternpost is believed to have been about 63 feet, and she had a breadth of 18 feet and a depth of $10\frac{3}{4}$ feet. Incidentally, these measurements are in Amsterdam feet, one of which equals 11.18 inches of our measurement.

The model built by Professor Jack for the museum is based on the best available information and the flag at the fore is that of the city of Amsterdam, where the ship was registered. At her main she carries the flag of Holland — orange, white, and blue horizontal stripes — with the letters *V O C* representing Vereenigde Oostindische Compagnie. At the mizzen is carried a similar flag without the initials, and the ensign at the stern is the flag of Holland charged with the arms of Amsterdam, which are repeated on the stern with supporting lions. The figurehead is the Dutch lion, which had been carried for many years in the Dutch navy. Professor Jack notes that the Dutch colors of that period, namely, orange, white, and blue are the colors of the present state flag of New York. They are arranged vertically in New York, while in Holland they were horizontal.

Many models of the historic *Mayflower* have been built, but very few have any claim to accuracy. In searching for information on which to make this model,



Delph-Navin

TO THE PRESIDENCY

... of the Alumni Association, B. Edwin Hutchinson, '09, has been named for election this year. Chairman of the finance committee of the Chrysler Corporation, of which he is also director and vice-president, the nominee selected by the National Nominating Committee of the Alumni Association for this spring's balloting has been a term member of the Corporation of the Institute since 1936. Mr. Hutchinson became vice-president and treasurer of the Chrysler Corporation in 1924 after extensive experience as a manufacturing engineer and executive. His chairmanship of the finance committee of that corporation began in 1935. A director of the Automobile Manufacturers Association, Mr. Hutchinson is a member of the Newcomen Society, the Princeton Engineering Society, the Detroit Engineering Society, the American Council on Foreign Relations, and the Society of Automotive Engineers, as well as of various clubs. He was Cyrus Fogg Brackett lecturer at Princeton in 1932.



NOMINATED

... for term membership on the Institute's Corporation. Selections by the National Nominating Committee of the Alumni Association this year are, from left to right, George J. Mead, '16, assistant to William S. Knudsen, director general of the Office of Production Management, Washington, D. C.; Robert E. Wilson, '16, President and director of the Pan American Petroleum and Transport Company and subsidiary companies, New York; and Edward Pennell Brooks, '17, Vice-President of Sears, Roebuck and Company, Chicago.

Professor Jack found that the known facts are her name; her tonnage, which was about nine score tons; and that she had topsails, since it was stated that a young man who fell overboard caught the topsail halyards, which were trailing over the ship's sides, and was saved. Beyond this, most is conjecture and a fruitful source of controversy. Although the model at the Institute was made before R. C. Anderson had undertaken a study of the history of the *Mayflower*, the fine model Professor Jack built corresponds fairly closely in sail plan and rigging to one based on Anderson's research. The Institute's model has the underwater portion painted green, as it was considered that by the time the ship arrived in America the bottom must have been well coated with seaweed. The topsides are brown to suggest a coating of pine tar, while the upper works are white, as some of these old ships were known to have been so painted.

Although her master's identity remains in doubt, there is evidence to suggest that the *Mayflower* was commanded by Captain Christopher Jones. What became of the *Mayflower* is a mystery, although Professor Jack notes that an attempt has been made to identify her timbers with those of an old barn in Buckinghamshire in England. While he agrees that some of those timbers came from an old ship, there is no proof whatever, he says, of their being from any particular ship, more especially from the *Mayflower*.

Elections Impend

BALLOTING to elect officers and representatives of the more than thirty thousand Alumni of Technology will be going on during the next few weeks. The slate of nominees for 1941 election has been prepared by the National Nominating Committee of the Alumni Association, comprising Ernest B. MacNaughton, '02; George M. Gadsby, '09; Charles R. Main, '09, chair-

man; Charles P. Fiske, '14; Walter J. Beadle, '17; Stanley W. Hyde, '17; Alfred W. Hough, '19; William J. Sherry, '21; Kenneth M. Cunningham, '22; and Franklin Fricker, '25.

For President of the Alumni Association, the nominee is B. Edwin Hutchinson, '09, III, Chrysler Corporation, Detroit; for Vice-President, Harold Bugbee, '20, XV, Walter B. Snow and Staff, Inc., Boston; for members of the Executive Committee, Herbert S. Cleverdon, '10, IV, Cleverdon, Varney and Pike, Boston; C. Yardley Chittick, '22, XV, Heard, Smith and Tennant, Boston.

Nominees for term membership on the Corporation of the Institute are George J. Mead, '16, II, Office of Production Management, Washington, D. C.; Robert E. Wilson, '16, X, Pan American Petroleum and Transport Company, New York; and Edward Pennell Brooks, '17, XV, Sears, Roebuck and Company, Chicago.

To succeed Messrs. Sherry, Gadsby, and MacNaughton as representatives of Districts 8, 9, and 10, respectively, on the National Nominating Committee, one member for each district will be elected from the following nominees: *District 8*: Charles A. Smith, '99, I, Georgia Power Company, Atlanta, Ga.; Thomas C. Keeling, '07, VI, Nashville Machine and Supply Company, Nashville, Tenn.; Arthur E. Hartwell, '09, II, Hartwell Iron Works, Houston, Texas; *District 9*: Charles F. Willis, '06, III, *Mining Journal*, Phoenix, Ariz.; Harry A. Rapelye, '08, II, Continental Can Company, Inc., Kansas City, Mo.; Winter Dean, '21, XV, Nicols, Dean and Gregg, St. Paul, Minn.; *District 10*: Joseph Daniels, '05, III, University of Washington, Seattle, Wash.; John C. Kinnear, '07, III, Nevada Consolidated Copper Corporation, McGill, Nev.; Edward E. Scofield, '19, VI, Washington Water Power Company, Spokane, Wash. Members of this Committee are elected by districts so staggered that three or four members relinquish their work each year.

Industrial Economics

RECOGNIZING the fact that after the war the nation will be confronted with problems of readjustment and reconstruction which in many respects will be more difficult than the problems created by war itself, the Institute next autumn will start a graduate program of research and instruction on economic and labor problems of industry, a program leading to the degree of doctor of philosophy in industrial economics.

Outlining the type of problems on which graduate students may work in different industries under the supervision of members of the Faculty, Professor Ralph E. Freeman, Head of the Department of Economics and Social Science, emphasized the need for long-range planning for peacetime conversion of plants and use of excess capacity in various industries now engaged in producing war products. He also spoke of the eventual absorption into industry of men in the Army and of how workers in defense industries can be redistributed. There is need for study, he said, of maintaining the impetus that the defense program is giving to technological invention and of improvement to create a higher standard of living in the postwar period. He added that in studying methods of assisting industry to make the eventual transition to peacetime operation and normal production, historical material and the mistakes of the past should be taken into consideration.

While the new program in industrial economics at the Institute does not propose to study these problems to the exclusion of the more immediate defense projects, Professor Freeman emphasized the need for constructive thinking on future readjustments. He said that several members of the staff of his Department are already engaged in governmental work on current problems.

In recent years the Institute has brought to its staff a number of authorities in the various fields to be covered, and this group will have the co-operation of the teaching staff in the scientific and engineering Departments, who will assist in seminars in industrial technology. Students will also have the benefit of close association with the work of the Department of Business and Engineering Administration in related studies of business management, and the help of the advanced work that has been done in the field of industrial statistics. The fundamental work of the Industrial Relations Section of the Department of Economics and Social Science is expected to be of special value in the projected Course.

This new branch of professional training is expected to fit graduate students for careers as teachers, research specialists, and industrial consultants in a broad field of industrial activity in which they will bring together the technical information of industry possessed by the engineer and industrialist and the knowledge, in both its theoretical and practical aspects, of the economist. The new Course is expected to enlarge the sphere of economists, who are already sought by industrial enterprises, banks, trade associations, and labor organizations. There is also a growing demand for adequately trained men in the various governmental administrative agencies concerned with industrial relations.

In announcing the Course, which requires a preparation including a bachelor of science or a bachelor of arts degree from a university of recognized standing, Professor Freeman said that fellowships up to \$1,200 a year will be available to specially qualified students in the new Course.

Louis J. Gillespie, 1886-1941

LOUIS J. GILLESPIE, Professor of Physical Chemistry in the Institute's Department of Chemistry, who had been a member of the staff since 1920, died on January 24. Before coming to the Institute he had considerable experience in teaching, bacteriological investigations, and research in soils and plant industry for the United States Department of Agriculture.

Professor Gillespie was born in Hillsboro Bridge, N. H., in 1886. In 1908 he was graduated from Brown University, which awarded him his doctorate in 1911. For the following three years he was a fellow in bacteriology at the Rockefeller Institute for Medical Research and a bacteriologist for the board of health of New York City. Professor Gillespie was the author of *Physical Chemistry* and of numerous articles in professional journals.

Fellowships

THE fourth national competition for a group of ten fellowships permitting participation in a one-year co-operative program of executive development in business administration and economics at the Institute was announced recently by President Compton. At the same time he disclosed a new grant of funds by the Alfred P. Sloan Foundation, Inc., of New York, to be used for stipends to aid those successful in the competition.

This is a distinctly co-operative program in which the Sloan Foundation, the Institute, and many individual companies are making significant contributions. The common goal is the development of leaders with an understanding of the broader and longer-term phases of management and of the complex economic and social environment in which modern business operates. With the completion next June of the tenth year of its operation, seventy men will have benefited from this training and returned to the companies from which they had leaves of absence. Many of these men, in spite of the brief lapse of time since completion of their work, are filling responsible executive positions, not a few in important defense industries. During the past three years over 275 well-known companies in all parts of the country have nominated almost five hundred candidates for these competitive fellowships, which are directed by Professor Wyman P. Fiske. Important current defense problems and inevitable postwar adjustments make even greater the long-range responsibility of industry to develop from its ranks leaders capable of meeting the problems ahead.

The competition, which closes on March 12, is open only to men in industry of the ages of from twenty-seven to thirty-three, who have by their progress demonstrated unusual promise of further advancement in responsibility. Leave of (Concluded on page 230)



"Dad, why do they put it under the street?"

"Because, Son, in a big city like this there isn't room *in* the streets for enough poles to carry all the telephone lines needed."

Cable is one of the many items of telephone apparatus which Western Electric produces. Were it not for cable, millions who now have telephones could not have them. Well ahead of public need, Western Electric has for years pioneered in improving the art of cable manufacture, packing more wires into limited

space, insulating them from each other more perfectly, and making the outer lead covering more resistant to destructive forces.

Telephones, switchboards, vacuum tubes—to name but a few others—all embody the same manufacturing skill.

Thus this Company, source of supply for Bell telephone companies, helps make the service they give the most reliable, most economical in the world.

Western Electric

... is back of your
Bell Telephone service

THE TREND OF AFFAIRS

(Concluded from page 197)

in the Charleston Navy Yard, and pressures as high as 1,700 pounds a square inch in Europe. The storage tank is insulated to minimize heat losses, and useful energy is stored in the water, in the steam, and in the surrounding metal. Since water normally fills about two-thirds of the tank, most of the energy is in the water rather than in the steam above it. In the highest-pressure locomotives, the metal parts have been estimated to store about one-fourth of the useful energy by virtue of their elevated temperature. When the engine is in operation, it draws steam from the tank; the pressure in the tank is thereby lowered and the water gives off more steam as a result of renewed boiling.

With low-pressure steam, about fifteen minutes are required to charge the locomotive for three hours of freight-switching service. In a typical high-pressure locomotive, one ton of steam at 1,700 pounds a square inch will pull a 400-ton train for more than six miles. An engine of this type has been regularly used in Europe to shuttle 1,500-ton coal trains on a one-mile siding between a railroad and a gasworks, at less than half the fuel cost for a direct-fired steam locomotive. On downhill runs, the engine may be operated as a compressor to provide braking action, either sending the compressed air into a storage tank or returning the air to the atmosphere through a valve.

The fireless locomotive in the Charleston Navy Yard is given two full steam charges and two partial charges during an eight-hour day, according to W. Mack Angas, '17, writing in the *Scientific American*. Steam pressure in this locomotive has usually been 160 pounds a square inch, but tests which have been made at 400 pounds a square inch show that a single charge at that pressure can provide amply for four hours of normal service.

In view of its well-defined advantages and limitations, the fireless steam locomotive appears qualified to take its place in the field of modern commercial transportation.

SIR THOMAS GRESHAM'S PICTURE

(Continued from page 200)

as Wren himself did with St. Paul's. In our own land, committees are actually spending time on plans to protect our historic shrines if the black-outs happen here. When sentimental reconstructions appear, regardless of whether they bear long-time animosities — as the famous Warren inscription for Louvain — they inevitably tend to congeal the city plan in the old form. For historic foci of sentiment, though of no present importance and therefore permissibly out of the way, are dramatic, bearing a whole series of contexts hard to forget. Though the fires may be scanted by historians, the things they destroy are vaunted.

The original sites of cities, moreover, were chosen either because they offered a natural means of defense or because commerce gathered men at the point. There

are perhaps no longer any natural points of defense, but if there be, they are probably very different from those which caused the earlier site selection; and rivers, usually obsolete as channels of commerce, constitute today the one unfailing guide for the hostile bombing plane. Hence good reasons may be adduced to show why a given city should not be rebuilt at all or should be located on some different site. At this moment the sentimentalists give tongue.

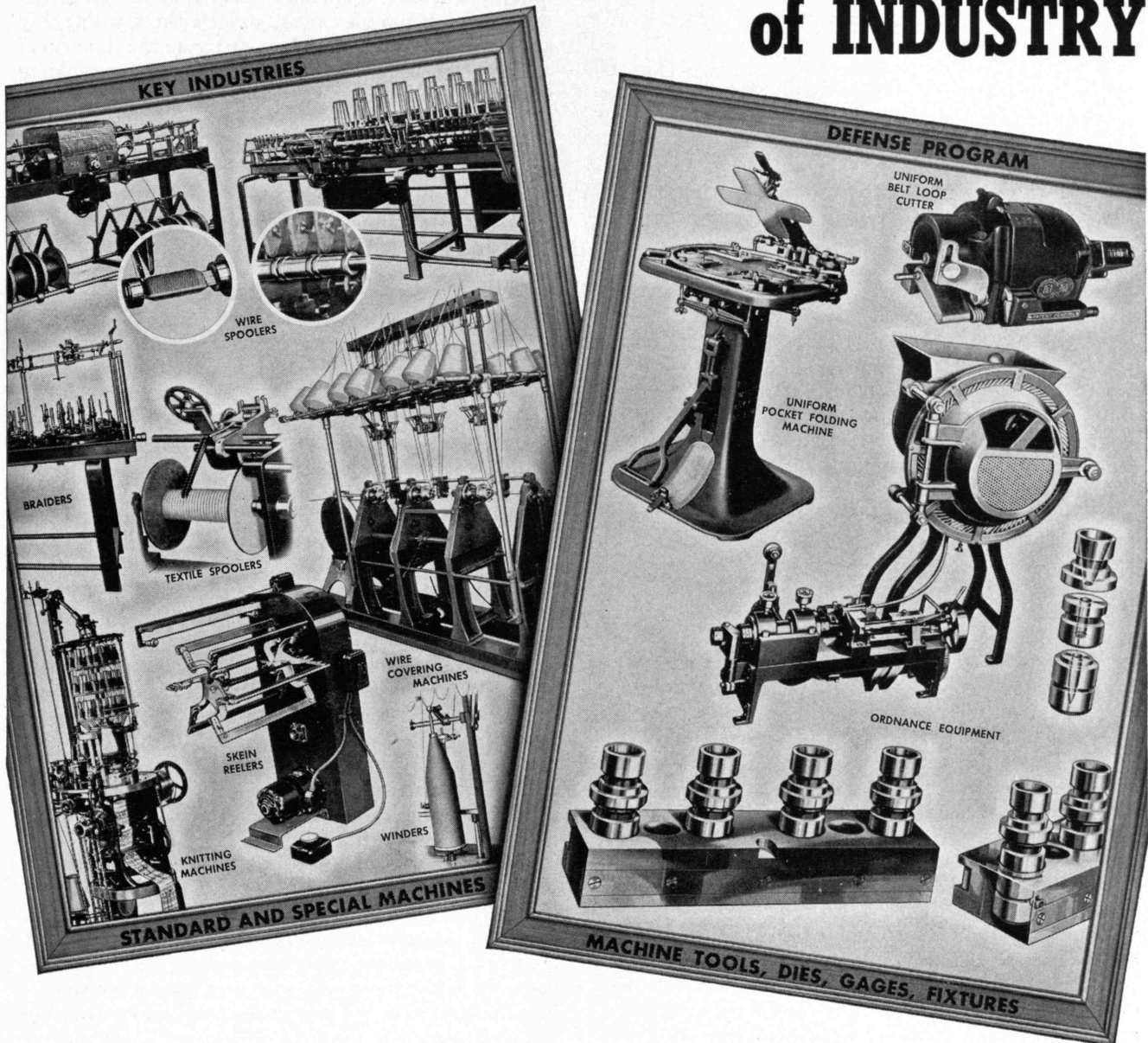
But the chorus of the softhearted seldom prevails unless to it is added the bay of the hardheaded. If I own the property adjacent to Times Square and all Manhattan is flattened to the ground, in the rebuilt city my property is unlikely to have as high a value relative to the whole, for the new plan is unlikely to lay as much importance on my area. It will be strange indeed, under such circumstances, if I do not agree with the members of the Society for Preventing Times Square from Becoming a Byre. Sentiment and private landownership fighting shoulder to shoulder have thus far been impregnable. Private landownership alone can put up a respectable fight. Profit of course is but the most vigorous of a whole series of motives which might cause men to block civic progress. Chambers of commerce and public housers are as town and gown; on the few occasions when the former have actively led movements for betterment, the latter have sometimes been in opposition. Serious Federal research in housing has been obstructed more than once by the conflicting ambitions of antagonistic department heads.

As has been suggested, however, there are psychological differences between the civic disasters of the past and those of today, as well as differences in scale. Finally, other major factors raise a hope that this time things will work themselves out differently, even though one very big assumption underlies all such speculation. The assumption is that when the battle is over, planners — our planners — will have something to say about what is done. But if we cannot make that assumption, discussion is profitless. Two major problems are posed. One is already set; the second cannot arise vigorously before the armistice.

Dramatically demonstrated in Finland, the first and present problem is the emergency demand that housing be provided for a very large proportion of a population, and at once. In Finland, a half million people are involved; the comparable number in the United States, for example, would be at least sixteen million. When urgency such as this exists, there can be no question of maintaining the old standards. The only realistic course, as Alvar Aalto has pointed out, is to get roof and walls up for the dispossessed, and to get them up at once. The shelter thus provided must average near the optimum possible under the conditions, for it is intolerable that any one family shall be rehoused at a standard so far above average that some other must fall seriously below. The lower degree of shelter would be uninhabitable. This problem has been solved variously in various times, never better perhaps than by our own Red Cross. But in its previous appearances, the problem has been faced fundamentally, even completely, as an emergency matter. In the present rehousing of Europe another factor appears.

(Continued on page 222)

FIDELITY *fits in* a Varied Picture of INDUSTRY



Applying an advanced skill gained from long experience in designing and building intricate precision machinery of its own make, FIDELITY produces special machines, machine tools, instruments, dies, gages, and fixtures for many different manufacturing needs . . . Doesn't this suggest that you, like many leaders of industry, will find here the machine-production service best suited to your needs?

FIDELITY MACHINE COMPANY

3908-18 FRANKFORD AVENUE, PHILADELPHIA, PA.

H. W. ANDERSON, '15, President and General Manager

SIR THOMAS GRESHAM'S PICTURE

(Continued from page 220)

Because of the virtual impossibility of erecting a building which will wear out when we want it to, emergency housing programs contain grave dangers. When urgency must be faced, as in Finland, it is impossible to plan towns in such a way as to insure that the permanent-temporary buildings, once erected, shall not later on lay a blighting hand on every effort of the planner who would gradually bring the people back to their former standard. Aalto has therefore proposed in his studies for Finland an ingenious and thoughtful alternative. It consists of so building the crude temporary shelters that they can later in various ways be converted into houses of higher standard and so moved on the terrain that the town plans can in turn be improved to the necessary higher level.

On page 198 is sketched his proposal for the very simplest of these shelters, one which is planned to be removed entirely, as a tent might be removed, and which he therefore names "transportable primitive shelter." These little units, each of which provides nothing more than two bunks on which to sleep, can be nested for transit and assembled in various relations around a central stove. Another proposal for a "transportable primitive shelter" provides four movable rooms which in the first instance will house eight people around a central heating unit, somewhat regardless of family considerations; such a shelter may later be adapted to form a simple one-family dwelling such as would be acceptable in rural areas.

A second arrangement, for "ready shelter," which at the beginning provides housing for three families, subsequently will become housing for one. In his schemes for "temporary shelter" Aalto has provided for the future town plan with buildings which at the outset serve seven families and later are broken apart to house two families, with adequate open space between the two houses. In his "embryo shelters" he provides for the growing type of accommodation, starting here always from the single family unit.

Aalto has pursued these studies seriously. He has developed many types, carefully considered as to space accommodations, designed in accordance with the materials and labor which may be available for his own land. Direct application of the arrangements to other places — to China, to Britain, even to disaster areas of our own land — can be made only in principle. Similar realistic local consideration must be given. Finally, as in any other form of planning, the whole scheme falls to the ground unless it is supported by those who would build — by government where government has the problem, by relief agencies where they have it, by industry if the question rests there. But the idea is thoughtful, it is worth careful consideration and development, and it involves the sort of thinking in which the planner can now profitably indulge.

Such thinking naturally covers only the most urgent problem of rehousing homeless populations. It takes no consideration of what is to be done about whole cities which have in effect been wiped from the map. Their

people may be rehoused somewhere and by methods proposed by Aalto. Immediately thereafter, the general question of re-employment arises. Other types of reconstruction must occur: first, clearly, industrial reconstruction, because life cannot go on without work; only after this problem is well solved can the luxury of amenity reconstruction be enjoyed — the rebuilding of spiritual and physical recreation centers, for example.

At this point we must consider what these cities shall be. Before we do so, we might consider whether they can possibly be what they should be. Will Sir Thomas Gresham still peer down?

Countless efforts have been made by well-meaning planners of the past to assemble neighborhood properties for a common goal. Many workable methods have been proposed, including the admirable Lex Adickes, which in effect established for each owner an equity in a common ownership, proportional to the value of his piece when he owned it privately. None of these schemes has worked with great success under ordinary stimuli.

But Britain, for example, is under more than ordinary stimuli. The people of every nation now appreciate that in total war all must contribute for all. If through enemy bombing my son is killed and yours is not, I have the consolation, for what it is worth, that my son will be called a hero. If, however, my building is gone and yours is not, the inescapable fact is that there is nothing heroic about lost money. The bombing of London is in a very real sense an attack on the institution of private real property. Britain has recognized the difficulty and set about nationalizing her insurance. In this undertaking lie mechanisms for rearranging property ownership after the battle: restoring it to the state, if desirable; dividing it on an equity basis, as in the Lex Adickes; or setting up some other substitute for restoring it in its small original parcels to the original owners.

Again, urban catastrophes of the past have been personal. While Chicago burned, St. Louis made hay. The competing city had to get back on its feet, and soon. When a nation lies in ruins, the situation may be different. A forward-thinking group in city A might well say: "Let the ambitious men of city B rapidly rebuild on their ruins, perpetuate the values of the past, even the bad values. Let them gain whatever temporary advantage there may be. We will proceed with more care. We will consider where the town should be; know what it should do and hence how it can best do its work. In the long run, we shall triumph." This type of thinking will be possible as never before.

Other factors may play their part. More and more people have more and more knowledge about more and more possible improvements. An infinitely greater popular demand for proper planning may be expected than could have been possible even in San Francisco in 1906. The British are already speculating thereon. Among their observations are such as these:

The present war may in one particular well hasten on what is already happening. Ferro-concrete will come still more into its own. . . . The desire to dissociate oneself from the bad old past, which led to such catastrophes as the present war, may well lead farther in that direction. . . . Anyone who has seen the indecent state of some buildings in London at the present moment . . . will (Continued on page 224)



"Ma Says It Tastes of Coal Oil!"

MA IS probably right. The clerk who had to fit shoes and horse collars, measure out nails and putty, and draw kerosene couldn't always stop to wash his hands before he handled the butter and crackers. And every so often the potato on the spout of the oil can would joggle off.

Today, for most of us, the mixture of food and kerosene odor has ceased to be a problem. More and more of our food, packed by electric machines, comes to us in sanitary containers. Electricity does the work, too, of washboard and carpet beater. Automobiles and good roads have shortened distances to town and work. And because so many of the routine, unpleasant jobs

which occupied our parents' time are now only memories, we have more opportunities for enjoying life to the full.

Practically every industry in America has helped to bring about this progress. And every industry, in doing so, has made use of the economies and manufacturing improvements that electricity brings. General Electric scientists, engineers, and workmen have been, for more than 60 years, finding ways for electricity to help raise American living standards—to create More Goods for More People at Less Cost. Today their efforts are helping further to build and strengthen the American way of life.

*G-E research and engineering have saved the public from ten to one hundred dollars
for every dollar they have earned for General Electric*

GENERAL  ELECTRIC

LOANS FOR NATIONAL DEFENSE



THE NEW ENGLAND TRUST COMPANY

Member Federal Deposit Insurance Corporation

*The customer
is always right!*

ESPECIALLY WHEN HE SENDS ORDERS FOR

PHOTO OFFSETS

VARITYPING

BLUE PRINTS

PHOTOSTATS

TO THE ELECTRO SUN COMPANY

Our reputation has been built on repeat business based on conscientious consideration of your needs. Never a broken promise.

ELECTRO SUN CO., INC. NEW YORK, N. Y.

PHOTO LITHOGRAPHS • BLUE PRINTS • PHOTO COPIES • LITHOPRINTS
161 WASHINGTON STREET GRAND CENTRAL TERMINAL BLDG.

BARclay 7-2334

MURray Hill 6-6526

SIR THOMAS GRESHAM'S PICTURE

(Continued from page 222)

in future want an architecture sufficiently truthful throughout not only to live decently and unpretentiously but to die decently as well. . . . It is the monumental shams with which during the last thirty years we have been lining the chief streets of our cities which are now disgracing us. . . . The ideal way would seem to be for each big city first of all to acquire the land and buildings within its boundaries and then to lease the buildings it wished to keep standing. Then, and only then, would the authorities feel free not only to clear great areas, but perhaps not to rebuild them at all.

Moreover, the 1940 Council to Promote the Planning of Social Environment has been formed, under the chairmanship of Lord Balfour of Burleigh; more official still, Thomas S. Tait is director of standardization for the Ministry of Works and Buildings, and his department has undertaken the formulation of a large reconstruction plan affecting England.

More than raising new buildings is here involved. Coventry, for instance, must consider not only its new street layouts but the question of whether it should again make bicycles; it must consider whether it shall make anything; indeed, whether it shall even continue to exist.

The industrial revolution may well be over; industrial evolution we shall constantly have with us. Consideration hence must be given to the question of what role England shall play in a new world in which she is victor. Shall she be base and frontier for a great English-speaking union? Shall she be fortress; or manufacturing center; or shall she revert to agriculture? If she remains industrial, shall she stick to the trades which first made her great? These questions must be answered before the role of each new city can be determined. It cannot profit a nation which has learned as much about co-operation as Britain has in the past months, lightly to cast the lesson aside when disaster ceases to threaten. Co-operation may be even more necessary in peace than in war.

The evolution of industry and economy is unnaturally accelerated by war. Plans made during the period of war for rebuilding devastated areas must therefore seek as far as they can to anticipate the needs and changes which will evolve into full being in the years after the cessation of hostilities.

Over all cogitations will hang the shadow of the bomber. The tendency in the present dark moment is to say that no replanning is worth thinking about unless a saner world is to exist. The world, however, has never been sane, and the city of the future cannot ignore the bomber. Human nature will not undergo a permanent change; men of bad will cannot be driven from the earth and the sky; the probabilities are that bombs and bombers will become increasingly efficient.

Defense may conceivably so overtake attack that the bombing of civilians from the skies will become unprofitable. But to plan that way is not safe. The future cities of those who are to survive must deal with the bomber. In this requirement is nothing fundamentally impossible. The exact methods are obviously still the subject more of speculation than of confident knowledge. To the extent that they require more material than

did former buildings, the new requirements will lay a heavy responsibility on a building industry which in its best days has never met its full social responsibility.

The solution to the problem of replanning whole cities is of course very difficult; may be in the greatest sense impossible, beyond the capacities of man to plan, beyond the capacities of men to co-operate to achieve. But to accomplish something important is still possible. To do so demands very close study of postwar national and regional needs. It means a government strong enough and of sufficient good will to do the necessary. It means that the planners must be very close indeed to that government and on hand now, so that when the great flood of rebuilding commences, it can proceed in accordance with an ordered program. The program for tomorrow must be under constant change because of the events of a tumultuous today; if the planners sit remotely in universities or at journalists' desks or tucked away in minor capacities in a hundred bureaus, out of the stream of events, deprived of contemporary information, their results will be unrealistic, useless. It is imperative that these later plans be not the creation of a four days' charette à la Wren.

It is also essential that the rest of society take the plans seriously. Cities have for the past thirty years undergone a spectacular breakdown. The physical destruction offers opportunity for wholesome reconstruction. If this is not done, we may all too soon return, and once and for all, to the state described by Hobbes,

with "no arts, no letters, no society, and, which is worst of all, continual fear and danger of violent death, and the life of man solitary, poor, nasty, brutish, and short."

COAL AND THE WEST

(Continued from page 203)

it has not replaced coal to that extent. For certain uses, of course, petroleum and natural gas are directly competitive with coal, the shift of about half the world's seagoing tonnage to oil being such an application, although in absolute terms the loss is not large. More important is the oil consumed by locomotives, power plants, and homes. Most oil products, however, are burned in automobile and airplane engines, competing with coal only to the extent that autos and planes take traffic away from railroads and urban transit lines. Neither is the natural gas consumed in making carbon black a hindrance to coal production. All in all, not much more than half of the crude oil and gas used every year can be considered as displacing coal, so that, at a fair guess, oil production has probably subtracted less than 1 per cent from the rate of growth of coal output.

The explanation most commonly put forth as the major cause of coal's decline is increased efficiency. In Great Britain, it is pointed out, the amount of coal necessary to generate a unit of electricity has been cut nearly in half in the last twenty-five years, and (Continued on page 226)

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Cambridge, Massachusetts

THE schools of Architecture, Engineering and Science, the Graduate School and the Division of Humanities offer instruction and opportunities for research, both undergraduate and graduate, in the following fields of study as well as in allied subjects:

SCHOOL OF ARCHITECTURE

Architecture
City Planning
City Planning Practice

SCHOOL OF SCIENCE

Biology and Public Health
Chemistry
General Science
Geology
Mathematics
Physics

SCHOOL OF ENGINEERING

Aeronautical Engineering
Building Engineering and Construction
Business and Engineering Administration
Chemical Engineering
Civil and Sanitary Engineering
Electrical Engineering
General Engineering
Marine Transportation
Mechanical Engineering
Metallurgy
Naval Architecture and Marine Engineering

The Catalogue contains full information and will be sent gratis and post free upon request. All correspondence regarding admission either to undergraduate or graduate study should be addressed to the Director of Admissions, M.I.T., Cambridge, Mass.

K-A ELECTRICAL WARP STOPS

*were included
in the Modernization programs
of three big
Manufacturing Concerns in 1940*

RHODE ISLAND WARP STOP EQUIPMENT CO.
PAWTUCKET, R. I. EDWIN C. SMITH '91, *President*

— **STEEL** —

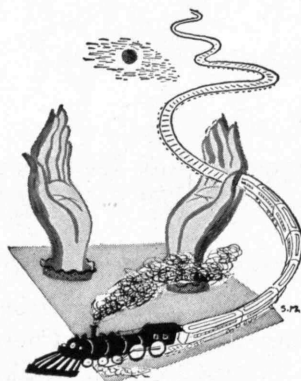
HOT AND COLD ROLLED
DEFORMED BARS FOR CONCRETE
NORWAY IRON BARS

Stahleker Steel Corp.

Second and Binney Sts., Kendall Sq., Cambridge, Mass.

Telephone Trowbridge 1440
WALLACE BLANCHARD, '16, *Treasurer*

**DOUBLY
HANDY**



Opening through its own passageway directly into Grand Central Terminal, the Hotel Roosevelt offers you perfect convenience on your arrival in New York . . . And because of its location at the heart of Manhattan's great midtown section, it affords the same kind of convenience for all outside activities . . . Doubly handy and doubly enjoyable . . . Attractive rooms with shower, \$4.00 — with tub and shower, from \$4.50.

**HOTEL
ROOSEVELT**

BERNAM G. HINES, *Managing Director*
MADISON AVENUE AT 45th ST., NEW YORK

COAL AND THE WEST

(Continued from page 225)

the output of gas per ton of coal has risen 30 per cent in the same time. In this country, a 31 per cent reduction has occurred in the coal required to do a given amount of work in a freight locomotive, a 19 per cent reduction in the amount of coal necessary to produce a ton of pig iron, and so on. To see the efficiency argument in its proper perspective, however, it must be remembered that increasing efficiency has always been a characteristic of this engineering age. The greatest percentage saving in coal consumption probably came not in the Twentieth Century but in 1769, when Watt patented a steam engine with two times the efficiency of the Newcomen type. There was also, as Bone and Himus describe it, the "epoch-making invention of hot blast in iron smelting by James Beaumont Neilson in the years 1828 to 1832, which also signalled the beginning of modern fuel economy generally." Nineteenth Century engineers were efficiency minded, used insulation, and had a pretty fair knowledge of the laws of heat flow; yet in spite of these facts coal consumption went bounding upward at an annual rate of 4 per cent or more. Even granting that attempts to increase efficiency have been more effective during the past quarter century than at any other period, they still do not explain why the rate of growth for coal changed from a plus to a minus.

Had the pre-World War rate of 4.4 per cent a year been continued, the world would be producing today some four thousand million tons of coal, over three times as much as its actual output. Neither water power, petroleum, nor increases in efficiency can account for the discrepancy.

The basic reason for coal's present course — and the theory checks too well with such indications as lessened per capita production (previous to the war boom) and flattened population curves for it to be ignored — is that the industrial civilization of Europe and America has reached either a temporary plateau or a permanent one, i.e., has reached maturity. Whether this cessation of growth is that imposed by the first World War and its aftermaths and thus is similar to the early maturity of a slum dweller, or whether the cessation is merely a pause before the start of a newer and braver world is hard to say. Some slackening in the pace of expansion could almost have been anticipated, for the natural procedure for new inventions and industries, and perhaps for the new civilization they have created, is to experiment gingerly with their possibilities, to grow rapidly as these possibilities are mastered, to taper off into a relatively long period of refinements and stability, and eventually either to decline or to move rapidly forward in the wake of a major new invention. The railroads appear to have passed into a static phase; with the advent of the fluorescent light a similar fate threatens the incandescent lamp. If, as Spengler prophesied on quite other grounds, this mechanical age were to follow the same development pattern as a mechanism, we should face a prince among ironies.

But the threat of large-scale retreat from the standards of this era seems still far away. The immediate danger is that, when the war ends, the nations will be

faced with the task of reknitting the fibers not of youthful and growing structures but of societies which have apparently lost the habit of rapid physical expansion. There is no doubt, for example, about the material capacity of France to replace, and rapidly, the buildings and equipment she has lost. The tremendous productive ability of present technology makes that achievement quite feasible. Nor is there much need for speculation about the dubious advantages of a world production based on the utilization of four thousand million tons of coal a year. We have managed fairly well with a relatively static level of energy consumption, for in replacing a worn-out automobile by a slightly better one, a lathe by a more rigid lathe, a pair of silk stockings by a pair of nylon, there is full opportunity for improvements in performance and for savings in cost — for a rising standard of living or, in broader terms, a stronger economy. What is most to be feared, however, is that the loss of momentum should reflect some deep-seated social confusion, some change in the ultimate motivating forces of this civilization. Without doubting the power of the West to recover, we must recognize that for many years the portents have indicated a slowing down of its grosser life processes.

THE HUMANITIES AT TECHNOLOGY

(Continued from page 212)

founder and has emphasized continuously the broader aims of a general education even within the framework of professional Courses themselves.

Occasionally there has been a discordant note. Some have felt that the work of the Institute should be strictly scientific and technical, and that the effort to seek a general education, especially in an undergraduate institution, is fruitless and discouraging. In his last annual report, in 1907, in a section entitled "Cultural Studies in Technical Schools," President Henry S. Pritchett struck a pessimistic note. "Twenty years ago," he said, "schools of technology were criticized on the ground that they taught men to make a living rather than to live. In response to this criticism, many schools of applied sciences — of which the Institute was a leader — have added to their courses of study a growing amount of so-called 'culture' studies. I think I express the opinion of many teachers in saying that the result has not been all that might be hoped for."

Pritchett believed that any Course, for example chemistry or physics, could be taught in such a way as to develop great humanistic interests as effectively as any of the so-called cultural subjects. From between the lines of his report we gather that he thought that each student should specialize very definitely in a single field of intellectual endeavor and that the broader culture which life so evidently requires could be secured not from the subject matter taught but from the personality of an inspiring and carefully chosen teacher.

In his educational philosophy Pritchett thus emphasized the teacher rather than the subject and evidently believed that the policy of the Institute in providing a wide variety of nonscientific subjects was bound to prove disappointing. All the other leaders of the Institute, however, as far as one can judge from (Concluded on page 228)

THE PETROLEUM INDUSTRY'S MOST CANDID CAMERA...



LANE-WELLS *Electrolog*

Lane-Wells Electrolog* locates producing zones by getting a true picture of all formations penetrated by a drill stem. Electrolog is one of the Lane-Wells Technical Oil Field Services that has cut drilling and completion

costs and increased ultimate well production.

*Electrical open hole logging.

LANE WELLS
TECHNICAL OIL FIELD SERVICES
LOS ANGELES — HOUSTON
OKLAHOMA CITY — NEW YORK

B.I.W. AIRCRAFT CABLES

To all engineers working in the aircraft industry, we have to offer a complete selection of electric wires and cables made to the latest specifications.

In many cases our products are designed to meet the requirements of new instruments, devices or controls, using construction most suitable for lightness and serviceability.

LIGHTING AND POWER CABLE
HIGH TENSION IGNITION CABLE
RADIO POWER AND CIRCUIT CABLE
MULTI-CONDUCTOR INSTRUMENT CABLE
SHIELDING BRAID AND BONDING CABLE

Write for our catalog AM-1 and please mention
The Technology Review

**BOSTON INSULATED
WIRE AND CABLE COMPANY**
BOSTON, MASSACHUSETTS

THE HUMANITIES AT TECHNOLOGY

(Concluded from page 227)

their published reports, have continued to advocate the double aspect of educational life at the Institute and have felt that the study of the natural sciences and of engineering subjects should be broadened by contacts with great books and great ideas in the humanistic and social fields. This point of view, so frequently urged by President Rogers at the beginning, has been emphasized by succeeding Presidents and, with the full approval of the Alumni, has been a central feature of the policy of President Compton in recent years. This tendency was especially marked by the appointment, in 1937, of Edwin S. Burdell, '20, as the first dean of humanities.

In the meantime the need for humanistic emphasis has been widely felt throughout the country, not only in engineering institutions but almost equally in arts colleges, which have been subject to the same excessive tendency toward undergraduate work which has sometimes become unduly specialized, vocational, and technical. A recent study reveals that during the past twelve years at least thirty humanities courses by name have appeared in American colleges. More are announced. Twenty years ago there was none.

All this would seem to indicate that, at long last, the wise old founder of M.I.T. has established his claim to prophetic insight, and that in two directions: by his emphasis on the cultural value of scientific study, and by his insistence that the natural sciences need to be supplemented and enriched by historical, literary, and philosophical contacts.

Thus in seventy-five exciting years, in which more changes have taken place than ever before in a similar period in the history of education, the old and respected name of the humanities, like that of the humanist, has been modified and extended to include not only courses in literature but courses in the arts, philosophy, and history; and in numerous institutions these courses are now offered, as they have been for so long at Technology, from a fresh point of view, to emphasize the essential unity of the human spirit and the need for a new appreciation of human values.

With all that has been done, the task of fitting the broader purposes of education into a scientific framework is not always easy. Both the time and the interest of engineering students are today more than ever fully occupied by their professional pursuits. The solution of this problem may perhaps lie not in the abandonment of early objectives but in some method by which more time may be found without undue extension of the period now given to professional education. President Walker in 1890 believed that the time would soon come when certain students would desire to give five years instead of four to their engineering education in order to find time for essential subjects which were otherwise crowded out. In 1891 he suggested one feasible solution: "I have . . . expressed the hope that the excellent facilities here offered for historical, political, and philosophical study will, in a near future, induce very many of our students, including our best scholars, to extend their courses to five years."

The careful plan which he formulated in this direction was made impracticable by the severe financial depression which began in 1892, and was laid aside until it was taken up by President Maclaurin, who also believed that many students might be found who would be willing to give five years to a course which might combine a sound engineering and a liberal education. American entrance into the World War in 1917 and the premature death of President Maclaurin made it impossible to carry into effect the five-year program which he foresaw.

Whatever detailed solutions may be found, the educational tide is now running strong and deep. The new definition of the humanities and the renewed emphasis on spiritual values in the widest sense, under the leadership of such educational statesmen as President Conant at Harvard, President Hutchins at Chicago, and President Compton at M.I.T. in the field of scientific and technical education, are symptoms of deeper forces which are now awakening; and the revival of the humanities is an added proof of the ever renewed idealism of the American people. For though the humanities are always tools as well as means to culture, they are especially needed today in a world which must realize once more that it can no longer live by bread alone.

PREPARATORY SCHOOLS FOR BOYS

CHAUNCY HALL SCHOOL

Founded 1828. The School that confines itself exclusively to the preparation of students for the Massachusetts Institute of Technology.

FRANKLIN T. KURT, *Principal*

553 Boylston Street, Boston, Mass.

CRANBROOK SCHOOL

A preparatory school for boys in grades 7-12. One year postgraduate course. Beautiful modern buildings. Single rooms in fire-resisting dormitories for all students. Small classes. Strong faculty. Graduates in over 60 colleges. Exceptional opportunities in arts, crafts, sciences, music. Broad program of sports. Near Detroit. Overnight by train from New York. Six hours from Chicago. For catalog address THE REGISTRAR, Cranbrook School, Box 5320, Bloomfield Hills, Michigan.

HEBRON ACADEMY

Thorough college preparation for boys at moderate cost. 81 Hebron boys freshmen in college last year. Excellent winter sports facilities. Ski trails, ski camps. Covered skating rink. Experienced winter sports coach.

For catalogue and illustrated booklet address

RALPH L. HUNT, *Principal*

Box T, Hebron, Maine

HUNTINGTON SCHOOL FOR BOYS

Five Forms. Special two-year course for entrance to M.I.T.

Summer Session (Co-educational)

Send for catalogues

CHARLES H. SAMPSON, Ed.M., Headmaster

320 Huntington Ave., Boston

Tel. Kenmore 1800

THE WORTH OF THE INITIATIVE

(Concluded from page 209)

mission, to realize some great dream, to organize life in accordance with some dominating principle. Accomplishment of such aims means taking a positive line, not merely making a defensive stand; it means taking the risks that go with a positive line, not seeking the security deemed to lie in a defensive position.

If you take risks, among them must assuredly be the risk of war. But if you make your will firm to realize your principle, if you mobilize your power to achieve your dream, you will be so strong that men will hesitate to issue the final challenge that involves war. And if they be so mad, you may live in confidence that the power you have generated, the force you represent, the ideas and the ideals which move you are stronger than those of the challenger. Recent years have shown again that the weak foreign policy of appeasement brings war, whereas the strong foreign policy of fulfillment may avoid it. Consequently, peace is seen at last to rest upon strength and courage and faith, upon clarity of mind and firmness of will; but never upon doubt or defeat, hesitation or fumbling, the defensive spirit.

The central task for Americans is an objective definition of our interests and our responsibilities, of a shape of things to come which would enlist our energies and our resources. Then, if war comes, we would fight not to "defend" something but to *achieve* something. Of course, by influence and strength we might without war achieve that positive goal, imposing it upon an exhausted world by moral and economic and intellectual force. Statesmanship consists in dealing with events at hand with the means available in order to achieve long-matured, positive goals.

HOUSEWIFE AND ART

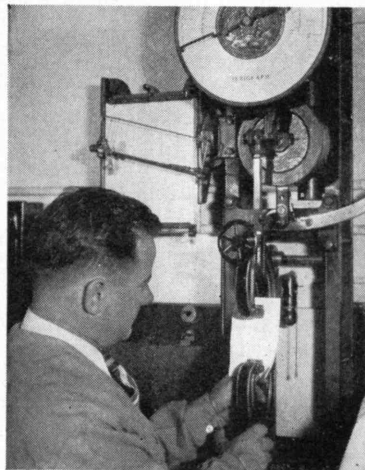
(Continued from page 206)

have not been improved by the superimposition of streamline skirts whose greatest use seems to be to spoil the tempers of oilers and enginemen and to achieve a less careful upkeep. These skirts will be of great use when trains start operating at double their present speeds. Then we shall have to give up our devotion to detail and be content to see the whole form wiggle around curves and over grades.

Compare a Finnish hunting knife with the streamline kitchen variety. Compare a whole row of things which may be found in any modern home — all of them of similar shape but each of differing function — with some antiques. Compare an English bicycle with its emphasis on lightness — a dear thing to the serious cyclist — with the streamline American variety, heavy with gadgets, misshapen like a Surrealistic painting, ponderous and ugly. For what purpose is the false funnel of a modern liner except to house the kennel?

Establishment of this principle of visual functioning presents a great opportunity for complete reform in the training of young men and women who are to become designers. Here is the opportunity to give the public a weapon against the scoffer who (Concluded on page 230)

PEQUOT SHEETS



Tested and Certified by
U. S. Testing Co. of New York

PEQUOT MILLS
Salem, Mass.

HENRY P. BENSON
President

—Class '86

THE RUMFORD PRESS

CONCORD
NEW HAMPSHIRE

WHERE PRINTING IS
STILL A **CRAFT**



MANHATTAN RUBBER PRODUCTS
for Industry

Thomas H. Boyd, '23
Wilder E. Perkins, '25
Charles P. McHugh, '26
Daniel J. Hanlon, '37
Albert W. Beucker, '40

Transmission and Conveyor Belts
Hose for every service
Friction Materials
Molded Rubber Products
Rubber Linings and Coverings
Abrasive Wheels
Bowling Balls

THE MANHATTAN RUBBER MANUFACTURING DIVISION
of Raybestos-Manhattan, Inc.
36 TOWNSEND STREET PASSAIC, N. J.

HOUSEWIFE AND ART

(Concluded from page 229)

laughs at the statement "I know what I like"; for what he likes is the only criterion that any man can have. We must show student designers that their natural interest in function is admirable; that the more they understand of the functioning of an object, the better they will design that object. We must not inhibit their natural desire to seek truth as well as beauty in their creations. The student must be more craftsman, more engineer. In order to produce an industrial designer, it is far better to take a man who has a talent for making beautiful things and train him as a machinist, than to take an art student and put him in the shop. Unless a man is master of his material, he cannot create in it. Some hardheaded practical man, with no more eye for beauty than a goat, can always tell him, "You can't do that; it won't work." It is far better to take a lad who has a strong love for construction and a feeling for beauty and make a master builder out of him, than to allow the building profession to receive its designs from untalented men who have had all the training that our architectural schools can pour into them. The architect — and by architect is meant the originator of building ideas — must be talented if he is to produce great architecture; he must be a master of building, its planning, its structure, its materials, and its forms. Give the talented man more knowledge of the practical side of his profession, instill in him the love for that lean beauty which has been described herein, and the chances are that finer designs, more popular products, a greater and more enduring art, will come from his hand and mind.

William H. Coburn, '11

William F. Dean, '17

John K. Phelan, '27

William H. Coburn & Co.

INVESTMENT COUNSEL

68 Devonshire St.

Boston, Mass.

MONSANTO CHEMICAL COMPANY

Merrimac Division

EVERETT
MASSACHUSETTS

*The largest and oldest
chemical manufacturer in New England*

THE INSTITUTE GAZETTE

(Concluded from page 218)

absence from present employment is a requirement. Candidates must also, normally by an adequate academic training in science or engineering, show evidence of ability to profit by a program of graduate level. Financial grants will be regulated by the recipient's income, but will not (for a married man) be less than \$2,100 nor more than \$2,500. Final awards will be made only after interviews with a selected group and will be based upon evidence of ability and opportunity to benefit from the special nature of the work.

Boit, Dalton & Church INSURANCE

89 BROAD STREET
BOSTON, MASS.

85 JOHN STREET
NEW YORK, N. Y.

PROFESSIONAL CARDS

JACKSON & MORELAND

Engineers

Public Utilities — Industrials

Railroad Electrification

Design and Supervision — Valuations

Economic and Operating Reports

BOSTON

NEW YORK

FAY, SPOFFORD & THORNDIKE

ENGINEERS

BOSTON, MASS.

BRIDGES

WATER SUPPLY AND SEWERAGE

PORT AND TERMINAL WORKS

FIRE PREVENTION

INVESTIGATIONS

DESIGNS

SUPERVISION OF CONSTRUCTION

H. K. BARROWS, '95

M. Am. Soc. C. E.

CONSULTING HYDRAULIC ENGINEER

Hydro-electric developments — Water supplies. Reports, plans, supervision. Advice, appraisals.

6 BEACON STREET

BOSTON, MASS.

STANLEY G. H. FITCH '00

CERTIFIED PUBLIC ACCOUNTANT

of PATTERSON, TEELE & DENNIS
1 Federal Street, Boston, Mass.

Cost Accountants and Auditors — Tax Consultants

NEW YORK

BOSTON

WASHINGTON

REPRESENTATIVES IN OTHER PRINCIPAL CITIES OF THE
UNITED STATES, CANADA, ENGLAND AND AUSTRALIA

EADIE, FREUND AND CAMPBELL

CONSULTING ENGINEERS

110 WEST FORTIETH STREET

NEW YORK CITY

Plans and Specifications — Examinations and Reports

Power, Heating, Ventilating, Electric, Plumbing,
Sprinkler, Refrigerating, Elevator Installations, etc.,
in Buildings and Industrial Plants

J. K. CAMPBELL, M. I. T. '11

MAURICE A. REIDY

Consulting Engineer

BRIDGES

BUILDINGS

STRUCTURAL DESIGNS

FOUNDATIONS

CONSTRUCTION CONSULTANT AND ARCHITECTURAL ENGINEER

Estimates and Appraisals

44 SCHOOL STREET

BOSTON, MASS.

STARKWEATHER ENGINEERING CO.

INCORPORATED

Engineers and Contractors for Pumping Plants

Boiler and Power Plants, Cooling Water

and Heat Recovery Systems

246 Walnut Street, Newtonville

BIGelow 8042

Wm. G. Starkweather, M.E.
Cornell '92

J. B. Starkweather, B.S.
M.I.T. '21

EVERETT E. KENT

Registered Attorneys in

Patent, Trade Mark and Copyright Causes

United States and Foreign

75 Federal Street, Boston

HUBbard 0234

LAZO - DEHESA G. FARIAS & MARTÍNEZ

Engineers and Architects

PLANS AND SPECIFICATIONS — EXAMINATIONS AND REPORTS

Construction Consultants — Power, Public Utilities, Heating, Architect and Arch. Engrs.

Ventilating — Refrigerating — Ind. Plants — Estimates and Valuations

AVE. MADERO No. 1

MEXICO, D.F., MEXICO

F. L. Lazo
C. Eng.
M. I. T. '21

M. L. Dehesa G. Farías
Architect
Roy. Acad. Sn. Carlos

J. Martínez Tejada
Mech. Eng.
Cornell '25

MORAN, PROCTOR, FREEMAN & MUESER

CONSULTING ENGINEERS

420 LEXINGTON AVENUE

NEW YORK CITY

Foundations for Buildings, Bridges and Dams;

Tunnels, Bulkheads, Marine Structures;

Soil Studies and Tests;

Reports, Design and Supervision.

WILLIAM H. MUESER, '22

GEORGE T. SOUTHGATE '10

Electrical and Thermal Engineer

Consultant in

APPARATUS, PROCESS and PATENT MATTERS

Office and Laboratory

114 East Thirty-second Street
New York, N. Y.

Telephone

LExington 2-8130

BOISSEVAIN, REINHARDT & SHAPIRO

Research and Analysis

Fluid Mechanics and Thermodynamics

KIRKland 6900
Extension 253

77 Massachusetts Avenue
Cambridge, Massachusetts

AN AID TO INDUSTRY IN LOCATING OUTSTANDING MEN

ENGINEERS FOR THE NAVY

Young engineers with good records of experience who would like to put their training and ability at the disposal of our armed forces will find opportunities in the Naval Reserve.

Applications for commissions in the Reserve should be addressed to the Commandants of local Naval Districts.

PLACEMENT BUREAU

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

CAMBRIDGE, MASS.

AN AID TO ALUMNI IN FINDING DESIRABLE POSITIONS

NEWS FROM THE CLUBS AND CLASSES

CLUB NOTES

M.I.T. Club of Akron

We were disappointed that Robert E. Caldwell, Dean of Humanities at M.I.T., was not able to be our guest and speaker at a meeting on September 23, as previously arranged. — Our first meeting of the current season, therefore, was held on November 12. There was an election of officers, with the result that Walter O. Teague '02 was elected president, and James E. Connor '23 was elected secretary. — After the business meeting there was an interesting talk by W. E. Thomas, squadron personnel manager of the Goodyear Tire and Rubber Company, Inc.

The second meeting of the year was held on December 12 at the University Club. The speaker was James Danaker, chief deputy clerk of Summit County Probate Court. His was an interesting and valuable talk on the importance of making a will for disposition of property. Approximately twenty-five members were present.

One of our new members, Riley Anthony '39, has been called into active service by the government. Lieutenant Anthony reported for duty at Fort Benning, Ga., on January 6. — Cornelius V. S. Knox '18, Lieutenant Commander in the United States Navy, has been transferred from Lakehurst, N.J., to Akron, Ohio, to be inspector of naval aircraft of the Goodyear Tire and Rubber Company. — JAMES E. CONNOR '23, *Secretary*, 1746 13th Street, Cuyahoga Falls, Ohio.

Technology Club of Chicago

Our first meeting of the new year, an informal, evening dinner and smoker, was held on January 21 at the University Club of Chicago. Our ambassador from Cambridge was the always welcome Samuel C. Prescott '94, Dean of Science.

He reported on general and special activities at the Institute, commenting on various aspects of broad research programs and discussing educational undertakings. In the course of his remarks Dean Prescott spoke also of the considerable number of staff members of M.I.T. who had resigned, had leaves of absence, or were on part-time jobs — all for the nation's defense. Included in his list were the names of many Alumni of M.I.T. who are now connected with other institutions.

One of the highlights of the evening was caused by the discovery of a meeting of the Amherst Club in the same building. George B. Jones '05 immediately organized a crew with stentorian voices to serenade the Amherst group with the familiar "Stein Song." (This was not so

appropriate, as there were no steins visible, and certainly no fair weather.) The appreciation was immediate. They responded by sending us their well-trained glee club to give us two of the Amherst classics. — The last feature of the evening was the showing of two new, colored reels of up-to-date moving pictures presenting the Institute.

An honored guest was Dr. Buchanan, chief of the department of biology at Northwestern University. There is now being organized at Northwestern a department known, for want of a better name, as "Western Institute of Technology." Bernard E. Proctor '23, Associate Professor of Food Technology at M.I.T., was also a guest. — Our gathering completely filled the room, and there were 140 seated at the tables. Our new President, Pete Harvey '05, presided. — NELSON C. WORKS '17, *Secretary*, Paine Webber and Company, 209 South La Salle Street, Chicago, Ill. LONSDALE GREEN '87, *Review Secretary*, 5639 Kenwood Avenue, Chicago, Ill.

Technology Club of New York

The annual Course I luncheon was held on January 16 and attracted a group of more than sixty Alumni. Faculty members from the Institute who were present to lead the discussion following the dinner included Professor Charles B. Breed '97, Head of the Department of Civil and Sanitary Engineering, Thomas R. Camp '25, Associate Professor of Sanitary Engineering, and Donald W. Taylor '34, Assistant Professor of Soil Mechanics.

Many class dinners and luncheons are taking place at the Club. The classes of '24 and '14 have held very successful get-togethers. Others are being planned for the future. — The three popular dining rooms of the Club are attracting an increasing number of Technology men both for luncheon and for dinner. The all-Tech table is filled to overflowing every day for luncheon. On the first floor, the taproom is more popular than ever, especially with the commuters because of its proximity to Grand Central Terminal.

Recent new members of the Club include Leon L. McGrady '17, James F. Downey, Jr., '20, and Harry J. Kahn '20. — JOHN J. MURPHY '23, *Secretary*, 24 East 39th Street, New York, N.Y. CONSTANTINE S. DADAKIS '34, *Publicity Committee*, 644 Riverside Drive, New York, N.Y.

Washington Society of the M.I.T.

At its dinner meeting on January 17 at the Y.W.C.A., the Society heard a talk by Jack Knight, nationally known director of public education for United Air Lines. Before retirement from flying a few years ago, Captain Knight had over 2,000,000 miles and over 18,000

hours in the air. At the time, he had accumulated more mileage than any other pilot in the United States, which probably means more than any in the world.

Captain Knight's talk on "Flying Yesterday and Today" consisted of an informal résumé of twenty years of air-line progress. His description of present problems and procedures in the industry was very enlightening. His delineation of his part in the great night flight in February, 1921, when mail was flown from San Francisco to New York, was most interesting. In those days flying was largely an adventure into the unknown, with no permanent beacons and no real information service and with hazards that do not exist today. The two-way radio, in Knight's opinion, is the greatest single step in the improvement of air transportation, as it enables the pilot to learn the latest weather information and constantly to advise of his position. Other improvements included adoption of twin motors fifty miles an hour faster than the old motors of 1921, and the taking along of a steward and copilot. Constant improvement since has not only made air-line travel safer, but has made it more livable. Now with the DC-3 in use on all air lines, the two-engine job that will run on one motor, a pilot with a thorough knowledge of meteorology, instruments, and so on, air transportation today is a far cry from the past.

Next year, Captain Knight stated, the four-motor job will provide for forty-five passengers, a cruising radius of two thousand miles, longer nonstop trips, hermetically sealed cabins, and still more speed. He looks to ultrahigh-frequency curved landing beams as the greatest development in air transportation for 1941. Knight described the robot pilot provided on the Stuka dive bombers to pull the ship out of the dive, release the bombs, and control the craft until the pilot recovers consciousness. After thirty such dives most pilots land in the hospital for at least three months, he said.

The following Technology men and guests enjoyed the talk and the dinner: Granville H. Parks '87, C. Leonard Brown '88, George W. Stone '89, John G. Crane '90, Charles G. Abbot '94, Joseph W. Clary '96, George E. Stratton '96, Proctor L. Dougherty '97, Frederick A. Hunnewell '97, Henry V. Hubbard '00, Charles H. Stratton '00, Hewitt Crosby '03, Merton L. Emerson '04, Harry H. Groves '04, Frank W. Milliken '04, George N. Wheat '04, John C. Damon '05, Henry H. Bentley '08, Aubrey D. Beidelman '15, John W. Conover '15, Frank E. Richardson '16, Horace M. Baxter '17, Edwin J. Grayson '17, Louis J. Grayson '19, Al F. O'Donnell '19, Merritt P. Smith '19, John Nolen, Jr., '20, Lyman P. Whitten '20, George R. Hopkins '22, William K. MacMahon '22, Robert K.

Thulman '22, Paul J. Culhane '23, William V. Cash '24, George D. Fife '24, Mary O. Soroka '26, M. Waldo Keys '28, S. Lindsay Lord '28, Raymond W. Jones '29, John A. Plugge '29, Nicholas P. Stathis '29, Raymond Underwood '29, Albert F. Bird '30, James G. Bowen '30, Henry D. Randall, Jr., '31, Frederick M. Moss '32, John A. Robertson '32, John Burroughs '34, George E. Wuestefeld '34, and Morton A. Copeland '40. The guests were O. E. Enge, Mr. Henderson, A. S. Dill, and Richard Audruk. — OLIVER G. GREEN '30, *Secretary*, 11408 Georgia Avenue Extended, Silver Spring, Md. WILLIAM K. MACMAHON '22, *Review Secretary*, Rosslyn Gas Company, 3240 Wilson Boulevard, Arlington, Va.

CLASS NOTES

1883

Franklin B. Richards, for many years prominent in the metal industries in Cleveland, Pittsburgh, and other centers, died on December 30 at his home in Cambridge, Mass., at the age of seventy-eight. He had retired ten years ago. During the World War he served as a lieutenant colonel and military assistant to the assistant secretary of war, Benedict Crowell.

Colonel Richards was born at Andover, Mass., on November 12, 1862, a son of Albert D. Richards, a Boston manufacturer. He was educated at private schools. He first worked as a chemist and metallurgist for Vermont copper smelters and then became assistant chemist for the Joliet Steel Company of Joliet, Ill. He next went with the Briar Hill Coal Company of Youngstown, Ohio, and later took charge of the ore department of Todd, Stambaugh and Company of Cleveland.

In 1890 he became general manager of the Buena Vista Iron Company of Virginia and in 1893 returned to Cleveland to start work as an ore salesman for the M. A. Hanna Company, the firm with which he remained associated as a director until his retirement. He was actively identified with the development of the pig-iron industry in Cleveland. In 1886 Richards married Caroline A. Dimmick, who survives him. He also leaves a daughter.

Your Secretary attended the convention of the American Economic Association held in New Orleans from December 27 to 30.

He took with him five hundred copies of a booklet, "Money, Gold, and Bank-Deposits," which was printed by the Orange Press for distribution at the convention. In January copies were given to members of the University Club of Winter Park, Fla., and a full session of questions and answers was held at an afternoon powwow on January 17.

Captain Clyde DuV. Hunt is now at St. Elizabeth's Hospital, Station L, Washington, D.C. — HARVEY S. CHASE, *Secretary*, 431 Chase Avenue, Winter Park, Fla.

1888

Henry J. Horn, one of the most prominent members of our Class, Vice-President of the Alumni Association in 1914 and President in 1915, died suddenly at his home in Brookline, Mass., on December 29. He was also term member of the Corporation from 1916 to 1921 and Alumni Council representative of the Newark Club from 1934 to 1936.

Horn was born in St. Paul and entered Technology in 1884. Immediately after graduation from the Course in Civil Engineering, he began his railroad career as an assistant engineer with the Chicago, St. Paul and Kansas City Railway. A year later he joined the engineering department of the Northern Pacific Railway Company and soon became chief draftsman. His rise with the Northern Pacific was rapid, and he became general manager in 1904. In 1910 he was appointed assistant general manager of the Chicago, Burlington and Quincy Railroad Company, but left the same year to become assistant to the president of the New York, New Haven and Hartford Railway. In 1911 he became vice-president of the New Haven, and a year later vice-president of the Boston and Maine Railroad. He retired from both positions in 1913 and had been a railroad analyst since that time.

Outside of his railroad career Horn served as a member of the American commission to Russia in 1917 and later was vice-chairman of the American railway commission to that country. In 1917 and 1918 he was a deputy commissioner of the American Red Cross. His interest in the Alumni Association and in all affairs of the Institute was constant to the end. He was always present at class reunions and dinners.

George S. Lee died at his home, 17 Albion Street, Hyde Park, Mass., on January 7. He entered our Class in the freshman year from Acton, Mass., and was graduated in Civil Engineering four years later. He started at once to work with Frank L. Fuller, civil engineer, Boston, and for fifteen years he had charge of installing water works in many cities and towns in New England. Lee married Susanne I. B. Johnson and went into business with his uncle under the firm name of Blake, Lee Company, wholesale fruit dealers in Boston, and he continued under that name after Mr. Blake's death. Lee was very loyal and seldom missed a class affair. He leaves his wife and a son, Gordon J.

As your Secretary has been in Princeton, N.J., for the last four months and a little out of touch with his usual sources of class notes, he feared he might run low on material. He has seen a great deal of the old Delaware and Raritan Canal on his walks and drives around the country, and notes that our classmate, A. Prescott Folwell, worked as "Leveller of New York state canals." Your Secretary thought he would ask Folwell how he leveled canals, and this is the reply he got: "I would be a little curious myself to know what leveling canals might be. The 'Class Record' should have said

that I was a level man (called leveler) on the canals. This is the name given to engineers of the third grade who are usually in charge of construction work. During the blizzard of '88 I was in charge of building a lock seventeen feet deep in the Mohawk Valley, and nature leveled off that canal, lock and all, by filling it full of snow so that its location was no longer visible. The contractor had to shovel out the snow before he could renew work. The history of New Jersey's canals is a very interesting one. If you had begun the study of them twenty-five years earlier you would have found many old structures that have since disappeared."

I have received a copy of the "Directory of the Technology Club of Chicago," 1940 edition. It has 102 pages. There have been thirty-four past presidents, and your Secretary's name comes third among those living. — BERTRAND R. T. COLLINS, *Secretary*, 57 Wiggins Street, Princeton, N.J.

1889

The following tribute to our late President, Hollis French, appeared in one of the Boston papers on December 2: "When the achievements of a life are summed up at its end, they sometimes amount to more than friends had supposed. Such is true of Hollis French. Those who knew him on one side only now learn how many other facets he had. The praise that is uttered and the tributes from men of many kinds are most impressive. As a consulting engineer he set his mark upon buildings far from his own section and was entrusted with large enterprises. Notable among buildings he helped to erect are the Boston Opera House, the Cleveland Art Museum and various buildings of Yale University. The list of his constructions is long, their engineering excellence outstanding. On all he did, he put the stamp of his personality. Men with whom he had been associated but once remembered him after many years and have written to lament his loss. He gave unstintingly of his advice and assistance. His rector, Dr. Phillips Endecott Osgood, has publicly testified to his work for Emmanuel Church. Hollis French was devoted to Emmanuel and also to the summer services at Annisquam near which, at the foot of a granite ledge, close to the tides he loved to watch, his ashes lie. He was an authority on American antiques. Through his interest in the Cleveland Art Museum, he lent to it for many years his collection of old silver and before his death made this loan an absolute gift. On silver he wrote his two best known books. He took pleasure in putting the last ('Jacob Hurd and His Sons') through the press himself and by his own efforts selling the whole edition. That book was written after the loss of his leg, which took him out of active life. Yet his last few years were his best, for in them his character and his religion proved their worth. An active, quick and authoritative man, he had to submit and suddenly, to limitations such as he had never borne. And submit he did,

1889 Continued

not meekly, nor piously, but steadily, uncomplainingly, and often humorously. In that mood he carried on to the end, which he accepted with fortitude. Of all of his many achievements, this was the greatest."

The Secretary has received a letter from George Orrok, Ancon, Canal Zone, dated December 11. It seems to show that George's energy and enthusiasm for whatever is next are as good as ever: "I have been talking with two Technology boys today — Dana [08], who used to be with the New York Port Authority, and Crabb [24], considerably younger. I went to a Technology dinner a few days ago. W. A. Danielson '26, Colonel in the Quartermaster Corps in the Canal Zone, was the next oldest man to me. I am here as consulting engineer for the War Department. They sent for me in August, and I told them my age and that I never went anywhere without Mrs. Orrok, but in October they sent a contract and we sailed on October 23, arriving on October 30. I am getting hold of what the work means, and it's a big thing, the biggest I have ever been in, running about \$300,000,000. I am concerned with the hydraulic and mechanical work and find it very interesting. There are maintenance and operation forces, about three hundred engineers, under Moore '26, a Tech man, and a special force of engineers which may run to six hundred. Housing is scarce, but building is going on at a great rate. We live at the Tivoli Hotel, and my office is at Diablo Heights three miles away.

Left-hand driving nearly gave me heart failure at first, but I am getting used to it. I'm up at six o'clock and work from eight to four. The climate is wonderful and I enjoy the country very much, but I'm sleepy all the time. They say I'll get over that soon, that everyone feels that way when he first comes. The most astonishing thing is the absence of bugs. There are no mosquitoes or flies or the ordinary midges — just a few moths. I have seen half a dozen in six weeks. We sit outdoors with lights, but not a bug comes around them. The only thing they haven't done away with is ants, and every house is protected. Termites, too, are very troublesome. Now I am on my second-story veranda among the royal palms looking north over Albrook Field where the air liners come in. Panama Bay is to the east, where we see the sun rise every morning around six. To the west is Ancon Hill and the continental divide in which the sun sets at 6:00 P.M. There is hardly any twilight. That I can't get used to. The sun should set in the Pacific! — Can't tell when I shall be home. . . . My regards to the Class and inquiring friends."

Frank Hobbs, who was recently elected chairman of the board of directors of Wentworth Institute, Boston, in addition to his many other interests, recently figured in a Boston *Herald* headline as follows: "Franklin W. Hobbs at 72 Wants to Know Why Red Flannel Underwear Wasn't Blue. Head of Arlington Mills has keen sense of humor, lively curiosity." An informal, two-column

write-up by Lawrence Dame followed, which the Secretary would like to include if he had the space. Here is a sample: "When you get Mr. Hobbs talking, you discover that he is not afraid to tell a story on himself. The vice-president-elect, Henry A. Wallace, is a member of the Textile Foundation, of which the Boston industrialist is chairman. The last time President Roosevelt re-appointed Mr. Hobbs (he has done so twice) Wallace made the announcement at a foundation meeting. 'Say,' said the secretary of agriculture with a mid-western drawl, 'how is it you're so rabid against the third term when you've had so many terms yourself?'"

Ernest V. Wright '89, whose death was chronicled in the January issue, was mentioned in "The Reader's Guide" in the New York *Herald Tribune* of October 13 as follows: "Thanksgiving Day can now come on: the authorship of 'When Father Carves the Duck' has been cleared up. The first information came, as might be supposed, from the omniscient Louella D. Everett, Boston, in whose anthology, 'Home and Holiday Verse,' published last November by Blue Ribbon Books, the poem occupies page 671. The author, Ernest Vincent Wright, was a Bostonian, and his famous poem was contributed to 'The Boston Evening Transcript' in 1890. He was a naval musician in the World War; he died Oct. 7, 1939 at the National Military Home in Los Angeles, aged sixty-seven. His achievement of writing a novel, 'Gadsby,' 50,110 words, without using the letter 'e,' was given considerable publicity; the book came out the week of Mr. Wright's death. C. M. S., Baltimore, has a copy of the 'Transcript' dated Sept. 19, 1914, containing the poem and giving the author's name in full instead of just the initials. But Maud Wright O'Leary, Newton, Mass., has inside information. 'I am very proud to tell you that Ernest Vincent Wright was my only brother. The 'Duck' was written just fifty years ago, when he was a lad of seventeen. It has been published and republished, set to music, sung in vaudeville and recited all over the country. Only two years ago Brother wrote: 'That old duck is still alive and I saw a notice of it in one of our California papers.' It has been claimed by many people and Brother always wrote and said it was 'his Duck.' I am planning to publish all his poems, including the 'Duck.' You may be interested to know that the original poem was first printed in the Facts and Fancies column of 'The Boston Transcript,' as many later ones were. E. V. W. was a Boston man, M.I.T. graduate and musician through the World War. Brother was a wit and could keep a parlor full of people laughing through an evening. As far back as the 'Duck' was written, I can still see our sitting room at 65 Waverly Street, Roxbury, and Brother sitting scribbling; he handed me the paper to read aloud and the family was highly amused. I remember my father saying, 'Well, Son, I've always prided myself on my carving!' Mrs. O'Leary sent a photograph of her

brother, a fine, scholarly figure." — WALTER H. KILHAM, Secretary, 126 Newbury Street, Boston, Mass.

1891

By the time you read this, you will have received the general letter regarding our fiftieth reunion, which will be held at the New Ocean House, Swampscott, Mass., on June 6 to 10. Further details will be sent you later.

We have been notified of several deaths since our last notes, but have no further information and had not heard from these classmates for a long time. George W. Bryden died in Chicago, Ill., on November 14. Miss Maria S. Eaton, who lived in Cambridge, died on April 14, 1939. Joseph E. Clark died on May 7, 1899, according to a recent notice from the Alumni Office. Henry M. Chase, who lived in Holyoke, Mass., died on April 5. Elbridge E. Duncan, who had lived for some time in St. Petersburg, Fla., died in September.

The following appeared in the New York *Times* of January 6: "Dr. George Ashley Campbell, former research engineer of the American Telephone and Telegraph Company, is the winner of the Edison Medal for 1940 of the American Institute of Electrical Engineers in recognition 'of his distinction as scientist and inventor and for his outstanding original contributions to the theory and application of electric circuits and apparatus', it was announced. . . . The award was founded by associates and friends of the late Thomas A. Edison, and the recipient is chosen by a committee of twenty-four members of the institute. Dr. Campbell, who retired in 1935 after having been employed by A. T. & T. continuously for thirty-eight years, is a graduate of Harvard University and the Massachusetts Institute of Technology."

Walter Douglass wrote from Sarasota, Fla., where he is spending the winter with his daughter: "No doubt you know we closed the New England Structural Company early this year. We liquidated and dismantled the plant. I'm taking it easy this fall and winter with my daughter Helen. She is busy — just started a big house on Siesta Key. The house covers an area one hundred feet by seventy feet and has a garage besides — so I'm having an interesting time. She has built fifteen houses in the last eight or nine years. Her husband, Prentiss French, is a landscape architect, and he is busy also with jobs in Jacksonville, Lakeland, and St. Petersburg. Because of the going out of business and so on, I was not very active at Technology reunions, but I hope to be back in Boston by spring or before."

Charlie Ricker has returned to Havana after his summer outing in New England and wrote us on December 10: "I arrived in Havana on November 2 and soon got back into the routine. I am not working very hard, and, having no mountains to climb, have gone back to swimming for out-of-door exercise. I shall try to get into good condition for the '91 reunion at Swampscott next June. . . . You should provide for swimming.

"From the newspapers I learn you are having some real winter weather. Perhaps you do not like it, but I envy you. Here it is summer, and I, like Gelett Burgess' kitten, 'find it much too warm all day.' But I had a wholesome vacation and think I am in good enough condition to resist the warm weather as long as I have to, with the help of plenty of vitamin B. Probably you are thinking the same about the cold and, if you are wise, are filling up with vitamin A. Everything is very quiet in Cuba. I never saw the harbor so deserted; not a ship at anchor and only one or two liners from the United States at the wharves. There's nowhere else for ships to go and not much for them to carry. A lot of tourists are expected this winter, and the natives are waiting to trim them."

Walter Hopton wrote us on December 16. His wife has not been well, having had a fall some time ago. They were to spend Christmas with his son and get acquainted with their granddaughter, born on September 4. Walter's son is general factory controller for Ingersoll-Rand Company, and Walter has since written that Lester was going to be located at the New York office and live in New York. He has this to say of Fred Cole: "I have not seen nor heard from him since October, 1939, when I reported that I had looked him up and happened to find him at home. He spends his winters in Florida and his summers at Lake Ontario. He showed me a photo of his bungalow in Florida. Between times he is at the Rochester address. I suppose he receives the mail sent him in Rochester, but there was no response of any sort to all the letters and other material about the fraternity reunion."

After his return to Santa Barbara, Charlie Garrison wrote Gorham Dana all about his trip home, giving a detailed daily schedule. The account is, unfortunately, too long for inclusion here. — The following changes of address have been received: Milton H. Kauffman, 2915 East 14th Avenue, Denver, Colo.; Ambrose Walker, Winter Park, Fla.; Francis B. Choate, Choate Motors, Box 1030, Santa Paula, Calif. — *Remember our fiftieth anniversary in June. Be sure to come.* — HENRY A. FISKE, Secretary, Grinnell Company, Inc., 260 West Exchange Street, Providence, R.I. BARNARD CAPEN, Assistant Secretary, 364 Union Avenue, Framingham, Mass.

1895

In the January Review, announcement was made that an election was under way for a president of our Class. Request was made to mark your ballot and return it to your Secretary. Through an unavoidable delay, the ballots are not going into the mail until this issue goes to press. If for any reason you do not receive your ballot, write your Secretary. Election results will be published later.

Eddie Alden has started his land cruise in his trailer bus. To date we have no record of his itinerary. — Jack Gardiner is basking in the good sunshine of St. Petersburg, Fla. Your Secretary hopes to

go South again to get some good out of the southern sunshine, and to call on a few of the boys. News from the Class is meager. — LUTHER K. YODER, Secretary, 69 Pleasant Street, Ayer, Mass. JOHN H. GARDINER, Assistant Secretary, 10 Clinton Place, Mount Vernon, N.Y.

1896

The Tech of January 17 contained the following story which concerned the son of our classmate Jimmie Driscoll, and it certainly will be of interest to classmates to learn of his parents' long-time interest in skating and the prowess of the son, Mike: "Last week one day a course I Senior walked in to confer with his advisor regarding work on his thesis. Said the professor: 'Glad to see you Driscoll. I'd begun to think you were giving up thesis work to have more time for your skating.' The prof's comment makes more sense to those of you who know that on the week-end previous Michael Driscoll '41 had won the Eastern States Double Figure Championship at Rye, New York, and with his pretty young partner, Dorothy Glazier of Brookline, is now earnestly practising for the National Figure Skating Championship matches which will be held in Boston on February 1.

"To be a champion figure skater is one thing, requiring tedious and long practise; and to be a Technology student is another. To be both of them is quite a feat, and this 'Mike' Driscoll, thanks to hard work and natural aptitudes in both directions, has accomplished. Mike's father, now a successful civil engineer, and a graduate of Technology in 1896, has been skating for many years, as has Mrs. Driscoll, and they started their offspring skating way back when he was thirteen. . . .

"Driscoll prepared for Technology at the Brookline High School from which he was graduated in 1937. Then in September of that year, Mike, who had just won the novice figure skating championship, traded his silver skates for a Coop slipstick and came to the Institute. Skating for the next four years was merely a recreation with him, until this Thanksgiving by chance he fell in with Doty Glazier at the Boston Figure Skating Club, and the two made so smooth a team together that he decided 'All work and no play, etc.'

"So, under the direction of 'Willie' Frick, who has turned out more ice champions than any other skating coach in the country, Mike and Doty, who is taking a sabbatical year from school before she enters Radcliffe College next fall, practiced two or more hours every afternoon. Then on Saturdays and Sundays they would practically live on the rink of the Skating Club running through their intricate routine constantly. Finally they went to Playland in Rye on January 11 and on Mike Driscoll and his partner the judges conferred the wreath of doubles champions for the Eastern states, a significant honor. Every afternoon now Mike and Doty meet on the ice at the Skating Club and spend several hours of intensive practice perfecting a five minute

routine which they hope will win them the National Championship at the meet on February 1."

In The Review of January the Secretary of the Class of 1907 stressed as an important item of news that Ned Spear had a daughter seventeen months old. We believe that it is most apropos to call the attention of the Secretary to the story of the hero of the Johnstown flood, who went to heaven and took great delight in telling of his wonderful exploit, only to be irked by the attitude of one celestial being who manifestly was not impressed, and was even most disdainful in his looks and actions. Finally, when the Johnstown hero could stand it no longer, he asked his disdainful listener who he might be, and received the reply, "I am Noah." The application of the story for the Class of 1907 is that Walter Pennell '96 has a daughter born on March 18, 1940.

A clipping from the Halifax, N.S., *Chronicle* of January 7, stated that on that date the condition of our classmate Henry A. Waterman, a member of the Nova Scotia legislature, was reported as much improved. He had been ill for some time, suffering from an attack of pneumonia, and his condition at one time had been critical. When the item appeared, he was considered to be out of danger. — A clipping from the Ponca City, Okla., *News* of December 1 showed a picture of Guy L. Morrill, and told of his appearance in that city to speak daily in the First Presbyterian Church at the preaching mission, which was to continue for the entire week. His schedule called for a study hour every forenoon at 9:30 for the women of the church and a regular service at 7:30 each night. As most of us are aware, Guy has been engaged in national work for the church since 1919.

On December 30 the Secretary had the pleasure of a call from Joe Harrington, who, with Mrs. Harrington, had gone to Wenham to spend Christmas with their son, Joseph Harrington, Jr., '30. Young Joe is director of the research department of the United Shoe Machinery Corporation in Beverly. Joe, Sr., said that he was definitely out of banking, having wound up the affairs of the local bank in Riverside, Ill., but he considered himself to be too young and too busy to retire. He now has the job of advisory engineer to the Northern Illinois Coal Corporation and the Sunlight Coal Company, dealing particularly with combustion and stoker problems. He has sent the Secretary a very interesting report on the control of ash characteristics, which tells the story of how he succeeded in changing a badly clinkering coal which was practically useless for industrial purposes into a very satisfactory fuel. Joe said that he was counting definitely on being present at our reunion in Osterville in June.

Another caller was Bert Spahr, who was in town from his ranch in North Egremont, Mass., on January 9, and the Secretary had a very enjoyable dinner and evening with Bert at the Hotel Copley-Plaza. Mrs. Spahr had had a fall which fractured a vertebra, so she has been living in a cast for a while, but her condi-

1896 Continued

tion is improving all the time. One intriguing item which Bert reported was his discovery of a wood stove known as a char-wood burner, which seems to be based on scientific principles in that it has a charging compartment which is filled up with wood of any size, or even sawdust, at intervals of eight to twenty-four hours, depending upon the weather. This wood is slowly changed into charcoal, and all of the gases, together with the charcoal, are ultimately consumed, which makes for efficient combustion. Another attractive feature is that the fire always keeps overnight, and even as long as twenty-four hours when the temperature is not frigid.

A third member of the Class who has been to Boston is Paul Litchfield, who telephoned on January 20 from the Copley-Plaza, where his Goodyear Tire and Rubber Company was having a Boston exhibit of national defense products for the Goodyear dealers. Paul continues to get to his camp in Canada for two weeks every year just before Labor Day, and has not missed a single year for twenty-two years. He has a winter home in Arizona, but business does not allow him to reside in it for any extended period. He did not anticipate that he would be able to get to Greenbush, Mass., this summer, as he has done in some previous summers. His company has just completed a new mechanical rubber goods factory at St. Marys, Ohio, and also a new textile plant in Brazil to be run in connection with the tire factory already in existence there.

The latest word from Arthur Baldwin is that he did not go to Charlottesville, Va., for the winter as he had planned, but still remains at the Hotel Somerset in Boston, and may stay there through the winter. — A communication from W. H. Thomas, who runs the St. Christopher School at 857 Mountain Avenue, Westfield, N.J., states that he will gladly send one of his little monthly journals to anyone who may be interested. These journals have been mentioned in previous class notes as the product of Thomas and his wife. In a few pages are expressed some of their ideas on current conditions. His son was graduated from the Westfield High School last June and is at present taking postgraduate work at the Holderness School for Boys in New Hampshire. The boy wants to be a mining engineer and has had M.I.T. as his ultimate objective in education.

A card, dated January 14, from the Myron Fullers said that they spent six months last summer in the Rocky, Selkirk, Cascade, Sierra, and Coast ranges of mountains and then took their car with them to Honolulu, where they have been spending the winter at 2490C Koa Avenue. They were planning to remain there until the latter part of April and then return to Brockton so that Myron could be on hand for our reunion in June.

It is with regret that the Secretaries report the death of John Gurney Callan of a heart attack on December 31. He was born on April 7, 1875, in Northfield, Conn., the son of Michael John and Olive

Rebecca (Gurney) Callan. He married, July 25, 1899, in Lynn, Mass., Martha Litchfield Towns, who died on May 2, 1937. Their children were Rosalie Dorothea (Mrs. Sven A. Baeckstrom) of Hofors, Sweden, born on November 13, 1903; Priscilla Elsa Gurney (Mrs. Georges L. Houle), of Winchester, born on October 11, 1906; Hildegard Muriel (Mrs. Donald T. Whittemore), of Cambridge, born on January 31, 1909; John Gurney, Jr., '34 of Sharon, born on April 1, 1911; and Paul Litchfield, (Harvard '37) of Schenectady, born on March 5, 1915. There are five grandchildren. Callan attended the public schools in Waltham, Salem, and Lynn, and after graduation from M.I.T. he was successively with the Edison Electric Illuminating Company of Boston, the General Electric Company, and Arthur D. Little Company, until 1915, when he became professor of steam and gas engineering at the University of Wisconsin, with leave of absence part of the time for war work. He went to England and Scotland in 1917 and 1918 for the shipping board and American International Company to make a thorough study of the application of internal-combustion engines for fabricated freight steamers. In 1919 he joined the Harvard Business School as professor of industrial management, which position he held up to the time of his death. He was a member of the Harvard Faculty Club, Sigma Xi, Tau Beta Pi, Pi Tau Sigma, Triangle, and Newcomen clubs. He had seventy patents on various inventions.

Gurney Callan had a serious mind combined with a dry humor, and he put his heart and soul into everything he did, both work and play, but withal he had a lovable disposition which endeared him to his family, his classmates, his students, and in fact to everyone with whom he came in contact. The services on January 3 were attended by Harry Baldwin and your two Secretaries. — CHARLES E. LOCKE, Secretary, Room 8-109, M.I.T., Cambridge, Mass. JOHN A. ROCKWELL, Assistant Secretary, 24 Garden Street, Cambridge, Mass.

1897

William C. Potter, III, chairman of the board of the Guaranty Trust Company of New York, retired on January 15 from that position after serving twenty years as chief executive of the third largest commercial bank in the country. He will still be connected with the institution as chairman of the executive committee. After being graduated from Technology, Mr. Potter was for a number of years connected with mining properties in the West and in Mexico. In 1912 he went to the Guaranty Trust Company as vice-president, leaving that position in 1916 to become a member of the firm of Guggenheim Brothers. In 1921 he returned to the Guaranty Trust Company to become its chief executive, a position he has held until now. In 1918 Mr. Potter was called to Washington to serve as chief of the equipment division of the Signal Corps of the United States Army and chief

of the bureau of aircraft production. — JOHN A. COLLINS, JR., Secretary, 20 Quincy Street, Lawrence, Mass.

1900

Manley reports on his recent activities: "I supervised the building of three plants for the English subsidiary of Procter and Gamble Company — Thomas Hedley and Company, Inc. — at Newcastle on Tyne, Manchester, and London. I am now consultant on the Procter and Gamble plants at Quincy, Mass., and Dallas, Texas. Since 1932 I've been an associate member of the Institution of Mechanical Engineers in England. I am also a member of the American Society of Mechanical Engineers, the Engineers Club, Cincinnati, and so on."

Bob Leach gives as his ten-year checkup: "My activities, aside from business, have been principally connected with technical societies, such as the American Institute of Mining and Metallurgical Engineers (chairman, Institute of Metals division, 1939), American Society for Testing Materials (chairman, subcommittee V of B 2 on precious metals), American Welding Society, American Chemical Society, and the British Institute of Metals." Bob later writes: "It was a pleasure to have the opportunity of joining you and others in the reunion, both at Osterville and at Cambridge. Forty years is a long time between drinks, and let us hope that fate will deal kindly with us and we all shall have the pleasure of greeting each other at the next reunion, which I understand will be held five years hence. In the meantime, I sincerely hope that if you should travel in this part of the country you will find time to let me extend whatever hospitality I may at our hilltop home. To you personally may I express my sincere appreciation for all that you did to make the reunion such a happy and successful event."

Bill Hart writes from Montreal: "Your cheerful Christmas card was very appropriate, and the sentiment expressed repeated the warm welcome that Mrs. Cotting and you gave me last summer at Osterville. That was a grand party. I have thought about it many times since. The war has dislocated everyone's affairs, and as a company we have considerable in hand to help Canada's contribution. Let us hope matters will improve for everybody soon."

Chet Richardson has pulled up stakes from Melrose Highlands and has moved to Wickford, R.I. Part of his letter reads: "Yes, we have changed our address; some jolt after living in one house for twenty-seven years! I came to Rhode Island on July 29 as structural engineer in the design office, and went back to Melrose Highlands week ends during August and September. On September 30 we moved here to this little old village of Wickford about four miles from Quonset Point via road. We were fortunate enough to get a comfortable modern house right in the village (not more than five hundred feet from the post office.) We are right on Route 1 (scenic route — not alternate A) about

twenty miles below Providence. We should be most happy to see you if you can get down this way. I jumped into this job very hurriedly — the work at the Metropolitan District Water Supply Commission was nearing an end, and I, as well as several others, should have had to look elsewhere for employment. I came as structural engineer, and Stuart G. Wallace '18, as mechanical engineer.

"The work is very interesting but also very strenuous — everything is urgent, and speed is the word. The work is varied, including almost everything you can think of in a structure — railroad, buildings, towers, piers, bulkheads, water supply, power plant, and so on. It is most interesting to see things develop. The first man on the pay roll was here on July 1 and now there are nearly five thousand people on the pay roll. How long I shall be here is a question."

We were shocked to hear of the death, on January 13 at St. Francis Hospital, Inc., in Miami, of Carleton Ellis, V. He was waiting for a plane to take him to his winter home in Nassau, Bahama Islands, when he was stricken with influenza. While he was an instructor at Technology after graduation, Ellis, with Chalmers and Wascoat, started to market a paint remover. The success of the venture brought out many other inventions, more notably lipstick, tung-oil laquers, photograph developers, cosmetics, chewing gum, plastics, acetone, synthetic resins, bone-shaped dog biscuit, petroleum-cracking process, and printing ink. Ellis had over eight hundred patents in all and had several more pending. He was born in Keene, N.H., on September 20, 1876, the son of Marcus and Catherine (Goodnow) Ellis. After leaving M.I.T., he worked as a chemist for several organizations, going to Montclair in 1908, when he opened his laboratories there. He was a charter member of the Inventors' Guild and a member of the American Chemical Society, American Institute of Chemical Engineers, the Society of the Chemical Industry, a fellow of the Chemical Society (of Great Britain), and from 1918 to 1921, president of the New Jersey Chemical Society, at the meetings of which he presented many papers. He won a gold medal at the Jamestown (Va.) Exposition in 1907 and the Edward Longstreth medal of the Franklin Institute in 1916. He leaves a widow, the former Birdella M. Wood of Dayton, Ohio, whom he married in 1901; two daughters, Mrs. Edward Heydt of Madison, N.J., and Mrs. John Ordway of Winchester, Mass.; and two sons, Carleton Ellis, Jr., of Chicago, and Bertrand Ellis of Montclair. Besides his homes in Montclair and Nassau, he had one in Hyannis, Mass. — C. BURTON COTTING, *Secretary*, 111 Devonshire Street, Boston, Mass.

1902

As might be expected, many of our Class are busy on defense work. Adrian Sawyer, who has just completed the Sloan Laboratories at Technology, is now (January) busy constructing a \$900,000,

seven-story, light-machine shop at the Charlestown Navy Yard. Sawyer received the contract in the middle of November and now has the foundations built and much of the steelwork ready for the construction. — Lewis Moore is at Camp Devens in charge of the structural division. He has charge of all the building operations and the architectural problems from the structural angle, while Ralph Franklin's firm, Albert B. Franklin, Inc., has charge of all the heating and ventilating construction. This should insure good housing for the boys at Devens.

Word has been received of the death, from a heart attack, of Robert V. Brown on December 23. At the time of his death he was with the Calco division of the American Cyanamid and Chemical Corporation in Newark, with whom he had been for the past ten years. Immediately after graduation, Bob went with the Cinclare Sugar Company at Cinclare, La., but in 1903 became connected with the Sherwin-Williams Company as assistant chemist and was stationed at the Cleveland plant, where he remained till 1907. At that time he became superintendent of the Ozark Smelting and Mining Company's zinc-oxide smelter at Coffeyville, Kan. He remained there till 1911, when he returned to the Sherwin-Williams Company and became manager of the white-lead department and superintendent of the dry-color works of the company at Chicago. He remained with them until he assumed his connection with the Calco company. Brown leaves two daughters, Mrs. Charles R. Watt of Brooklyn, and Mrs. Clinton E. Leach of North Plainfield; and three sons, Robert V., Jr., William Bradford, and Richard G., all living in Plainfield, N.J., where Brown made his home. Mrs. Brown died several years ago. — BURTON G. PHILBRICK, *Secretary*, 246 Stuart Street, Boston, Mass.

1903

Walter H. Adams, who has been in southern California for many years, has been called to active army duty and, with the rank of colonel, is stationed at Sacramento and Los Angeles with the Selective Service System. — Has anyone any information about Augustus S. Leavitt, I, or Inez Merrill, VII?

We are sorry to have to report that Ralph E. Carlisle died in June, 1939. For some time he had been personnel director at Lever Brothers Company in Cambridge, Mass. He left a widow and two children.

George Greene reports that the Class has done fairly well on the Alumni Fund, but he has no figures for comparison. — Plans are being made for an informal class dinner in February. — FREDERIC A. EUSTIS, *Secretary*, 131 State Street, Boston, Mass. JAMES A. CUSHMAN, *Assistant Secretary*, 441 Stuart Street, Boston, Mass.

1905

The first midwinter meeting of the Class scheduled for January 28 at Sid Strickland's home in Brookline will have

THE TECHNOLOGY REVIEW

been adjourned by the time you read the notes. Sid volunteered to show his collection of pilgrim relics, which, according to the Boston *Transcript* of January 13, have grown to an extent "not only to fill his basement workshop but are gradually driving him out of his study — all under the worried gaze of his wife." Your Secretary has finally fallen to Andy Fisher's bragging about his famous quahog chowders, and Sid is turning over the kitchen to Andy's culinary prowess. The survivors will write a report of this meeting for the April notes.

Through the thoughtfulness of Pete Harvey, the Secretary has received a copy of a very fine 102-page brochure of the Technology Club of Chicago. Pete is vice-president of the club and chairman of the directory committee. We also note that Frank E. Payne is a member of the executive committee. George B. Jones is one of the past presidents. — Frank Chesterman writes that on March 1 he is to be transferred from Pittsburgh to Philadelphia, where he has been appointed operating vice-president of the Bell Telephone Company of Pennsylvania and the Diamond State Telephone Company, with business address at 1835 Arch Street. He takes credit for sponsoring a project which has resulted in doubling the Class Secretary's salary, that is salary as secretary of the Class. Thanks, Frank. Your salary as third assistant secretary is hereby also doubled.

John Damon gave us a new address in Silver Spring, Md., with the bare statement that he expected to be in the United States Army instead of the Securities and Exchange Commission after February 1. A similar hint from Sam Shapira says that Sam is already at Camp Devens, Ayer, Mass., though in what capacity we do not know. In the same vein Andy Fisher hands us a picture clipped recently from the Boston *Post* showing Ronan C. Grady commissioning the commander of the new destroyer, U.S.S. *Guinn*. Andy claims Grady was with us during our first years at M.I.T. but the records at Cambridge do not corroborate this. Does anyone else remember Grady?

H. Hoffman Kennedy, IV, now at 625 Madison Avenue, New York City, who spent most of his years since Technology in France, but who returned to the United States a couple of years ago on a visit, writes that "the Germans have taken all my furniture, linen, and so on, so I doubt if I can ever live there again." Harry Wentworth is busy on the draft board of Newton. His oldest son, Gordon, a tailender in the draft, volunteered and is already in the service at Camp Devens. — We only know what we read in the newspapers, but Warren W. Loomis, VI, was married recently to Gladys F. Saville and is residing in Needham, Mass. Good luck, Bunny. — The Secretary acknowledges with thanks a Christmas card from the Class of '87, also many from '05 men.

Ray Bell, according to the Register of Former Students, has a new residential address in Chicago. A letter from Ray

1905 Continued

about some "country engineering" (plug for the Secretary) at his new ranch in Maryland makes us wonder whether Ray really knows where he is at. It's rather puzzling, as we do not know now whether we are to have our thirty-sixth reunion at the ranch in Maryland, at Bell's Roost on Long Island, on the schooner *Yankee*, or at Old Lyme. Please light, Ray, long enough for us to catch up with you. Tom W. Osgood, III, has moved from Bedford, Pa., to 1502 Michigan Avenue, La Porte, Ind. Tom Jewett, I, has a new address, 8314 Carey Lane, Silver Spring, Md., in which community Bertrand L. Johnson, III, has recently located. Robert L. Young is no longer making paper for the *National Geographic Magazine*, having moved to Portland, Maine, where he has found a very fine berth with the S. D. Warren Company. The Secretary discovered Kilborn Whitman, Jr., at the office of Metcalf and Eddy, Boston, recently, where he has been employed for many years in engineering work. He wished to be remembered to all his old classmates. — FRED W. GOLDTHWAIT, *Secretary*, 274 Franklin Street, Boston, Mass. SIDNEY T. STRICKLAND, *Assistant Secretary*, 75 State Street, Boston, Mass.

1907

The usual midwinter dinner of '07 men near Boston was held in the silver room at Walker Memorial in Cambridge on January 7. Sixteen men were present, several who usually attend being prevented by sickness or previous engagements. Lawrie Allen presided in the absence of Alexander Macomber, Class President, who was suffering not only from arthritis but also from a sacroiliac difficulty due to a wrenched back. I talked with Mac on the telephone on January 6 at his suite at the Hotel Sheraton where he and his wife live during the winter. (They go to their Peterboro, N.H., place during the summer. He was planning to go to Texas on January 13 for a two-month vacation and rest.) Others at the dinner were Dick Ashenden, Lester Brock, Percy Colvin, George Crane, Ellis Doucette, Bill Egan, Tom Gould, Ed Lee, Bryant Nichols, Octavus Peabody, Bob Rand, Don Robbins, Gilbert Small, Oscar Starkweather, and Phil Walker.

After a first-class dinner provided by Mr. Bridges and the Technology Dining Service, the Secretary told several items of news pertaining to classmates, and then Gilbert Small spoke informally. He is now senior partner in the firm of J. R. Worcester and Company, Boston, consulting engineers, having been with them since 1907. He paid tribute to Professor George F. Swain '77, who was in charge of the Department of Civil Engineering when we were undergraduates, saying that he was the greatest influence that ever came into his professional career. Small told briefly of some of his work on bridges and dams in Boston and then devoted the main portion of his talk to his principal hobby, the raising of bees. He had a hive with him (no bees), and also fresh honeycomb, a square of which

he gave to each man. He told of the method of locating a bee tree in the woods, the different varieties of bees, their breeding, determination of sex, and many other interesting side lights and experiences of his own in connection with this hobby. As with everything that Gilbert tackles, he evidently has gone into this bee business with enthusiasm and has made himself extremely well informed. If you readers are interested in bee culture or in raising cultivated blueberries as big as Concord grapes or small plums, grown under a tobacco frame covered with muslin, Gilbert can give you all the answers.

Dick Ashenden had just returned from a brief vacation in Cocoa, Fla. He told me that while passing through Jacksonville on his return, he met, by appointment, Stanley D. Moore, I, who is president of the Southern Paint and Asphalt Products Company in that city. Stanley's mailing address is Ortega, Fla. — We all were delighted to see Ellis Doucette on January 7, at the first class meeting he has ever attended. The class notes in the February Review told of how we happened to get in touch with him last November, and by coming to this dinner he stood squarely behind his then-expressed desire to meet '07 men. I sat beside him at the table, told him about the men present and other classmates, and I believe that we shall see Ellis at future class events.

Phil Walker, who is maintenance engineer at Whittin Machine Works, Whitinsville, Mass., is now serving his twentieth consecutive year as leader and teacher of an adult Bible class composed of both men and women in a Baptist church in Whitinsville. The Sunday attendance averages between 120 and 130 persons. To anyone who has ever had experience or knowledge of this sort of activity, as I have, such a record means a tremendous tribute to Phil's personality and ability.

Tucky Noyes writes from Augusta, Maine, that J. Damon Whittemore called on him last December. Tucky says: "I hadn't seen him for thirty years and more. Apparently he has his same crop of dark-brown hair, and not a gray thread in it." Dick Ashenden says that Whittemore is now a vice-president of Chase National Bank, New York. — Ed Lee reports his second grandchild, the daughter of his daughter Virginia, born on May 13. — Hud Hastings wrote early in January that he was particularly busy as chairman of the education committee of the New Haven Chamber of Commerce, which is trying to establish a state trade school there. — Ed Squire's son, Raymond, is a junior at Middlebury College. When Ed was at Middlebury last year for the winter carnival, he stayed at the home of Phelps Swett, who is professor of geography there.

E. Leon Chaffee was appointed Rumford professor of physics and director of the Cruft laboratory at Harvard on September 1. He also retains his chair as Gordon McKay professor of physics and communication engineering. — William B. Coffin has permanently moved from

Brookline to Powder Point, Duxbury, Mass., still having his office at 120 Boylston Street, Boston, where he is a member of the architectural firm of Sturgis Associates, Inc. Bill's daughter Ruth is teaching music at Beaver Country Day School, Inc., in Brookline, Mass.; his daughter Barbara is a professional entertainer; and his third daughter, Dorothy, is a junior at Bennington College. — I met John S. Nicholl in Boston early in January. He looked well. He is a sales representative for a few different lines of plumbing supplies, carrying on his business from his home, 37 Old Farm Road, Wellesley Hills, Mass.

B. Karl Sharp's address is now 117 Sutton Manor, New Rochelle, N.Y. — Charles E. Baker is a superintendent with Trimount Dredging Corporation of Boston, having been with this firm since 1926. His present address is 219 Broadway, Norwich, Conn. Herbert T. Gerrish '08 is president of this concern. — Oscar Starkweather lives at and carries on his business from 57 Hemlock Street, Needham, Mass. He is a landscape contractor and has a nice business established as the result of many years of fine work on both private and public property in Needham and vicinity. Oscar is one of our most loyal classmates, always to be depended on to attend class reunions and dinners, and he is just as lively, mentally and physically, and as full of fun and mischief as he was thirty years ago. He has four children, the youngest twenty-five years old, and several grandchildren.

We have as a new address for Edward C. Story, VIII, 318 South Fulton Street, Allentown, Pa., but know nothing about his history or present business or family activities. — As of January 1, Harold Wonson had recovered sufficiently from his sickness (mentioned in the January Review) to go to his office for business for *half an hour* a day. — Through Octavus Peabody, I have learned that Bill Woodward is at 80 East Fifth Street, Clifton, N.J. Peabo's wife received a letter from Mrs. Woodward giving this address and simply saying that Bill is "working on propellers." We don't know what kind of propellers, or whether his work concerns design or manufacture. Bill discontinued the growing of plants in chemical solution about which he was so enthusiastic a year ago and has closed up his house in South Yarmouth, Mass., for the time being.

Through the courtesy of Jim Barker, I received a clipping from the Chicago daily *News* of January 14 telling of the death of Leslie C. Whittemore '07 on January 13. Leslie was a graduate in the Course in Sanitary Engineering and had followed this type of work all his life. In December, 1907, he became an engineering assistant with the Massachusetts state board of health; in January, 1909, assistant chemist at Washington filtration plant; in May, 1909, assistant engineer with New York board of water supply; and in October, 1912, engineer of design for the sanitary district of Chicago, maintaining this connection for over twenty-eight years until his death. He

1907 Continued

was a member of the American Society of Civil Engineers and of the Central States Sewage Works Association. On June 4, 1913, he married Lucile M. Tabor, who survives him, as does a twenty-six-year-old son, Robert. Burial was at Milford, Mass., Leslie's birthplace. I wrote a note of sympathy to the widow at the family home address, 7038 Chappel Avenue, Chicago.

I have heard from a reliable source that our distinguished classmate, Clarence D. Howe, Minister of Munitions and Supply in Canada, returned to America on the battleship *King George V*, in the latter part of January, in the company of Viscount Halifax, the new British ambassador to the United States. — BRYANT NICHOLS, *Secretary*, 126 Charles Street, Auburndale, Mass. HAROLD S. WONSON, *Assistant Secretary*, Commonwealth Shoe and Leather Company, Whitman, Mass.

1909

On December 30 the Class lost one of its most popular members, Bill Kelly, able research chemist, who died at the Jefferson Hospital, Philadelphia, after a brief illness. Bill and Marguerite were with us at our thirtieth reunion at Oyster Harbors and celebrated their twenty-third wedding anniversary on that week end. We shall miss Bill's cordial greeting and rare humor.

William James Kelly was born in Boston on January 18, 1888. He was educated in the Boston public schools and after graduation from M.I.T. spent four years at the University of Leipzig in Germany and received the degree of doctor of philosophy in 1913. Upon his return to the United States in 1913 he became a research chemist for the United States Rubber Company for a year, leaving this position to become a member of the petroleum refinery laboratories of Standard Oil of New York. From 1918 to 1927 he was a research chemist at the Goodyear Tire and Rubber Company in Akron, Ohio. During this time he developed new analytical methods for determining the sulphur in rubber and the coefficient of vulcanization in rubber. He also worked on various types of colloidal problems. He was associated with the development of accelerators and was granted patents on the manufacture of mercapto benzothiazole. He was well known for his translation of a text on latex by E. A. Hauser [Professor of Chemical Engineering at M.I.T.], as well as for other publications on rubber in both technical journals and various monographs.

In 1927 he became associated with the Rohm and Haas Company and developed hard-rubber separators for storage batteries. He was associated with the development of new resins in the coating industry and later became a patent agent for the Rohm and Haas Company, handling patents relating to chemical subjects.

Dr. Kelly has been active in the affairs of the American Chemical Society. He was one of the organizers of the Akron section and acted as secretary from 1923 to 1926. He was vice-chairman of the Philadelphia section of the American

Chemical Society from 1930 to 1931 and chairman in 1931 to 1932. Since that time he had maintained an active interest in the affairs of both the local section and the national society, had been a member of the executive committee of the local section and represented the local section as counselor in the national organization.

Dr. Kelly lived at 6409 Woodcrest Avenue and is survived by his wife, who was Marguerite A. Cahill of Boston, and by his daughter, Roberta J., who is a student at Pennsylvania State College. He was a member of the Penn Athletic Club.

Tom Desmond has now added to his many accomplishments that of a naturalist, for, according to the New York *Herald Tribune*, he was with a group taking a bird census on Long Island for the New York Audubon Society not long ago. — Chet Pope sailed in the middle of January on a business trip to South America and expected to be away about three months.

Mr. and Mrs. F. Gardiner Perry of Wellesley, Mass., have announced the engagement of their daughter, Annie Moseley Perry, to Dexter Pingree Nichols, son of former Mayor and Mrs. Malcolm E. Nichols of Jamaica Plain. Miss Perry is a graduate of the Perry Kindergarten Normal School, Boston, and at present is teaching at the Anne L. Page Memorial School, which is affiliated with Wellesley College. Mr. Nichols is a member of the class of 1941 at Harvard College.

The class notes in the January Review contained a reference by Carl Gram, Class Agent, to contributions to the Class of 1909 Scholarship Fund. It has come to my attention that the list of contributors (supplied by M.I.T.) inadvertently omitted the names of M. K. Weill and Mrs. Carroll Paul (Helen Longyear), who have taken out insurance policies for the benefit of the class fund, and of George W. Bowers and John F. McCarthy, who have made cash contributions to the fund. We apologize for the omission, and trust that the interest manifested by so many members of the Class in this worthy object may stimulate others to join us, so that eventually the total value of the fund may be brought up to at least \$50,000. — CHARLES R. MAIN, *Secretary*, 201 Devonshire Street, Boston, Mass. *Assistant Secretaries*: PAUL M. WISWALL, MAURICE R. SCHARFF, New York; GEORGE E. WALLIS, Chicago.

1910

The following news item appeared in the January 11 issue of *Hotel and Restaurant News*: "Harold Manson, vice-president of Rival Foods, accompanied by Mrs. Manson, is making a 16,000-mile air flight to South America and the Argentine areas, combining the pleasure trip with many business calls and making a general study of the various food supply sources."

The following letter was received from Hiram E. Beebe of Ipswich, S.D.: "... I intend to leave for Florida and be around Miami and perhaps a little north for over a solid month. This will be the first time in any of my trips that I have settled

down in any one place for longer than a week, and it will be a new experience as I intend to sort of check possibilities of making some cash. A year ago I spent a month on the Pacific Coast and did quite a bit of work there and made rather good on that; maybe it was luck. In general, however, our country seems to be turning more towards manufacturing each year, and there is a smaller percentage of the people engaged in agriculture. A person might as well recognize whether the tide is going out or coming in. Daughter Beatrice enjoyed the year at Lasell Junior College a great deal. She is now at the University of South Dakota at Vermillion, and from present indications son Ed — who was captain of the high-school football team for this, his senior year — may be at the university this fall. In any case, his ambition is to go to a college where he can get on the football team. If your work takes you down around Miami, better drop me a line here at Ipswich, as mail will be forwarded each day. I know a very good café where the singing is just as good as the Class exhibited both at the Tech show and at our banquets. I send good wishes to you personally and to the members of '10. Better get a job on the west coast and stop in on your trips there."

The following excerpt was taken from the Boston *Herald* of January 18: "Roger Williams, vice-president of the Newport News Shipbuilding and Drydock Company, announced today that Karl Fernstrom, professor of engineering at Massachusetts Institute of Technology had been named manager of the North Carolina Shipbuilding Company, whose plant, a subsidiary of the company here, will be built at Wilmington, N.C. Fernstrom, formerly associated with the shipyard here, has been on the M.I.T. faculty for several years. He is the son of Henning Fernstrom, the consulting engineer."

Your Secretary has been out of town working on the rehabilitation of the plant of the Remington Arms Company, Inc., at Ilion, N.Y., where he has been commissioned by the Morton C. Tuttle Company to do the engineering. — HERBERT S. CLEVERDON, *Secretary*, 46 Cornhill, Boston, Mass.

1911

At a committee meeting in Boston in mid-January, preliminary plans for the program of the thirty-year reunion at the Mayflower Hotel, Manomet Point, Plymouth, on June 6 to 9, were completed by the entire committee in session: Ted Van Tassel, chairman; O. W. Stewart, Emmons Whitcomb, Dennie, and Jack. Arrival at the historic town is set for Friday afternoon, the sixth, with one of Charlie Dooley's famous Mayflower shore dinners that evening. On Saturday morning there will be a fishing trip, tennis matches, swimming, and golf, with a continuation of the same after lunch. The class banquet will come on Saturday night, the seventh, with special entertainment features, never announced in advance, and dancing until midnight; then —! Sunday morning will provide an opportunity for a trip to the

1911 Continued

historic spots in Plymouth, as well as further chance for golf, tennis, and so on. An old-fashioned New England Sunday dinner will be featured at noon, with Dr. and Mrs. Compton as guests of honor. After dinner the class picture will be taken — page Carl Richmond — and the afternoon will again be available for miscellaneous sports or trips. After supper we will adjourn to the lounge for bridge and other features to be planned later. On Monday, the ninth, we'll leave after breakfast for Cambridge, where we'll join other Alumni in celebrating Alumni Day 1941 at the Institute, with the concluding alumni banquet in the Hotel Statler, Boston. — There you have it, mates. — How can you afford to miss it?

On New Year's day I was particularly delighted to get two letters from the Middle West — one from Sam Schmidt, VII, and the other from Otilie Cushman, wife of Paul A., VI. Sam, in Cincinnati, writes: "I read through the 1911 notes in the November issue and it made me a bit homesick for the gang that I knew. I am hoping that nothing will happen to prevent my being present at the reunion. — Just think of it, thirty years, a veritable lifetime! I am already a grandfather, have two daughters married and two remaining to be married; no sons. You see — I hate war!"

"During the last war and a few years thereafter I did public-health work and some war relief in Palestine, Poland, and the Ukraine. A year or two after my return to this country, in 1927, to be precise, I started the *Every Friday*, a weekly Jewish paper, and have been at it ever since."

Under separate cover he sent me a copy of a testimonial issue which a special committee prepared upon his return from his latest trip abroad. In a box beside a fine picture of Sam as he is today, the committee said, in part: "Twenty-five years ago there came a man to Cincinnati . . . many men have come and gone since. But this man was destined to bring to our city and our Jewish community more than a name to be entered on the roster of those who have toiled and hoped. Samuel M. Schmidt, to whom this testimonial issue is dedicated, brought to you and to us the strength of his character, the zeal of his ideals, the tirelessness of his efforts, the burning eagerness to serve." Governor Lehman of New York State, in a congratulatory letter, said: "I hope that he will be spared for many more years in good health, contentment and communal service," while Rabbi Stephen S. Wise said: "I consider him one of the very fine and enormously useful citizens of Cincinnati. In Zionist work he has been invaluable, and we shall never forget what he was able to do in connection with the Zionist Medical Unit. He has the rare capacity, among Jews who rise to leadership, of being able to serve a cause so completely that he forgets Samuel Schmidt . . . rare gift, rare achievement."

We are proud of you as a successful '11 man, Sam, especially when we remember the serious handicap that you have had

since the age of sixteen, when, as a worker in a rubber factory, earning money for your education, your right arm was caught in a rubber grinder, and this necessitated its amputation.

Prefaced by the good news that Paul and his wife are planning to attend the reunion, the Cushman letter revealed that Paul secured a release from his faculty position at Valparaiso University two years ago to take a somewhat better paying position in industry with the McGill Manufacturing Company there in Valparaiso, Ind. The company makes ball bearings and die castings and he is "testing engineer, metallurgist, papa, and shiner-of-the-front-door-knob there," to quote the letter. He is keeping his hand in educationally by continuing several evening classes in adult education, sponsored by the government and industrial plants there for their employees. At professional-society meetings recently in Chicago he reports having seen Marcus A. Grossmann, III; Ed Woodward, VI, and Alf deForest, XIII. Paul is active in church work in his home city and a few years ago was made a fellow in the American Association for the Advancement of Science.

The dawn of '41 brought another success story of an '11 man — for on January 1, Ken Faunce, VI, was admitted to the firm of John C. Paige and Company, insurance, Boston. Describing the company as "one doing a lot of business with the hotel and allied industries," *Hotel and Restaurant News* said: "'Ken' has been the company's contact man and, as such, has won himself a host of fine friends, substantial business and the respect of everyone with whom he does business. He is active in allied association work, is a member of the Luncheon Club and several other groups. He has been with the Paige Company for 25 years."

I had a nice call, although all too short, from Dick Ranger, VIII, in mid-January. He and an associate were returning to Newark, N.J., after having been in Boston for the dedication and final tune up of a new set of Rangertone electric chimes at St. Paul's Protestant Episcopal Cathedral there. He looks fine and says he is definitely planning to be with us this June at Plymouth.

Last month I reported Louis Grandgent, IV, as now located at 307 South Chelsea Lane, Bethesda, Md., and in response to a note he writes: "It's true that, in the service of the government, I was recently transferred 'from the great So'west to the nation's capitol.' I wish I could report some startling connection with the defense activities. — As a matter of fact, I tried to get back in the Army but was considered 'overage' and not even worth trading off for a naval base or something."

"When still a comparatively young man in 1933, I joined the Tennessee Valley Authority and stayed in the valley for more than five years, seeing, learning, and helping do many wonderful things in which Technology men had a prominent part (Ted Parker, chief engineer). Always as an architect or engineer — I've never

been able to decide which — I had interesting connections of an incidental sort with National Park Service, Resettlement Administration, and the committee on hygiene of the American Public Health Association.

"Since my efforts were mainly specialized in housing, I transferred in 1938 to the then newly organized United States Housing Authority, spending more than two years giving advice on technical matters to local housing authorities. Half of this time I spent in the Southwest as regional technical adviser on a vast number of projects. Having survived so long in such a perilous occupation as giving advice, I am now enjoying temporary seclusion in a research capacity in the United States Housing Authority in Washington. The nearest we come to defense is 'defense housing.' Son, Roland, is now a sophomore at M.I.T."

Bill Warner, I, thoughtfully sent me a clipping from the January issue of *Mining and Metallurgy*, official publication of the American Institute of Mining and Metallurgical Engineers, containing a photo of Alf deForest, XIII, and announcing that Alf was to give the eighteenth Howe memorial lecture at this year's annual meeting. "His Howe lecture," it said, "will describe recent improvements in electrical methods of rapidly recording local strains; of recording elastic stress waves up to any desired speed of application of loads; of accurately measuring pressure waves progressing in steel at 17,000 feet per second; and of determining longitudinal and hoop stresses in gun barrels and recording the various modes of vibration of gun barrels."

Bill is planning to come on from Nowata, Okla., for the reunion. His second son is in the Harvard Graduate School, which gives him an added incentive to be back here in June. His oldest son is in the army flying school at Randolph Field, Texas, was cadet captain at his military school in Tulsa, and is battalion adjutant at present. "My only claim to fame," Bill concludes, "is my appointment as government appeal agent for this county in connection with the selective service or draft. Most of the nonpaying jobs, which can draw more fire than bouquets, seem to come my way. I was Republican county chairman in the recent campaign and am not proud of the results in a Democratic county in a Democratic state."

In acknowledging my letter of congratulation upon his appointment as Swedish consul at Boston, Al Wilson, I, speaking for his wife and himself, said: "It is my hope that we shall be able to attend the thirty-year reunion in June." Here in Worcester, Fred Daniels, VI, has been elected vice-president of the chamber of commerce, and Harold Robinson, I, after ten years' devoted service, has resigned as secretary and a member of the city planning board because of the pressure of his own civil-engineering business. Harold's oldest boy, Henry, a Norwich University graduate and a first lieutenant in the Army, had a miraculous escape from death in an automobile accident in mid-

1911 Continued

January, when he was thrown from his car in a skid crash and sustained a concussion from which he was unconscious nearly four days.

Here are some new addresses dug out by the Alumni Office for classmates from whom mail had been returned at previous addresses: Ethan A. Collier, I, Oregon State Highway Department, 9200 McLoughlin Boulevard, Portland, Ore.; F. Lester Corts, 45 Kew Gardens Road, Kew Gardens, Long Island, N.Y.; Henry C. Frisbie, I, 100 Via Triest, Newport Beach, Calif.; and Francis M. O'Neill, I, 15 Longwood Avenue, Holyoke, Mass.

Hello, right at this month's dead line comes first word of '11 men returning to active army service in Washington. From Carl Richmond, I: "Without my asking for it or having much to say about it, I received telegraphic orders at Buffalo on January 8 to proceed to Washington on January 9 and report for duty as major, Corps of Engineers, United States Army, in the production branch, office of the Assistant Secretary of War. On arrival I found two classmates, both majors, already on duty in the same office: Harold Lord, II, of Lexington, Mass., like myself in the engineers; and Pete Gaillard, VI, of Washington, D.C., in the Ordnance Department."

"My own work is to be with fire prevention at manufacturing plants engaged in the production of war supplies. Of course this is right down my alley—I should eat it up! I suppose I am here for the proverbial year, at the end of which time I sincerely hope that the world will be in a sufficiently happier state to warrant our resumption of normal civil-life work."

"Of course I saw the presidential inauguration and the parade. The principal man that I knew in the parade was Governor Saltonstall. He had a good hand from my section. In the same office with me is Elmer E. Barnes, instructor in military science at M.I.T. from 1926 to 1930. I had breakfast this morning with Raymond E. Wilson '12, and Hovey Freeman '16, member of the Institute Visiting Committee on Mathematics. Across the corridor is LeRoy M. Hersum '21, whom I knew for a number of years as a consulting engineer. He is a capable and highly placed officer of the Army."

Phil Kerr, II, writes that this last year has been a hectic one for him with the winding up of the Public Works Administration, with which he had been associated. "This set me looking for another job," he writes, "and I got one with the Ordnance Department of the Army, working in Philadelphia helping with the procurement of munitions. And now, to make a long story short, I have been called to active duty under my reserve commission (lieutenant colonel), and am on general staff duty here at headquarters, Second Army Corps, Wilmington, Del. The headquarters are new, and I have been here only a few days, so you can imagine how busy we all are, especially as I am a reserve officer trying to get onto things. However, I am very happy with my interesting assignment."

These notes, written in late January, follow right on the heels of class dues notices carrying the "W. t. D." request, so here's hoping for some nice news nuggets to present here a month hence. See you all in June, I hope, I hope, I hope! — ORVILLE B. DENISON, *Secretary*, Chamber of Commerce, Worcester, Mass. JOHN A. HERLIHY, *Assistant Secretary*, 588 Riverside Avenue, Medford, Mass.

1912

Our busy Secretary, Fred Shepard, had to leave for the Pacific Coast a short while before these notes were due and sent an urgent plea to your Assistant Secretary to go to bat for him in the ninth inning. So here we are, but about all we are going to be able to do is to knock a weak bunt.—Shepard said that he expected to be gone for several weeks and would make stops in various cities en route to the Pacific. He hoped he might be able to get in touch with some of our classmates. We hope he does, as these notes could stand a little seasoning with news of some of those from whom we hear but seldom.

Edwin C. Holbrook, I, returned last fall from a three-year stay in the Philippines. After a few weeks in New York at his company's headquarters and after a visit with his people in Massachusetts, he set off in January for another assignment. This time he has gone to the Canal Zone. As you may recall, Ed is sales engineer and foreign representative of the United States Steel Export Company, whose main offices are at 30 Church Street, New York. Your Assistant Secretary enjoyed seeing Ed, who never fails to get in touch with us when he gets to New York. At a luncheon Ed told us that he expected most of his activities in the near future to be in connection with national defense projects at and near the Panama Canal.

Page Golsan, VI, helped promote the big annual dinner dance of the New York Alumni held early in February at the Hotel Biltmore. — FREDERICK J. SHEPARD, Jr., *Secretary*, 125 Walnut Street, Watertown, Mass. DAVID J. McGRATH, *Assistant Secretary*, McGraw-Hill Publishing Company, Inc., 330 West 42d Street, New York, N.Y.

1913

H. B. Harvey '05 was very thoughtful to send to your Secretary the recent directory of the Technology Club of Chicago. It is the last word in directories. Our Chicago men are John Blatchford, III, Edwin C. Gere, I, P. Donald Horgan, IV, Stanley W. Parker, III, Paul E. Rudolph, I, and Arnold S. Wahl, V.

In the Raleigh, N.C., *Times*, of November 8 appeared the following by Dale Carnegie: "At 119 Franklin Street, Dayton, Ohio, lives L. Luzern Custer. As a boy he dreamed inventions, talked inventions. Graduating from the Steele High School in Dayton, he attended the Massachusetts Institute of Technology in Boston and crammed more scientific knowledge inside his cranium. Then one day he got an idea for an invention. Some-

thing new, something different, something the public would grab. It was an electrically operated dining-room table. It was called the 'Rotoserve dining table.' There were two parts. The center was raised and revolved. When you wanted something on the other side of the table, you just touched a button by your plate and presto-chango! the center revolved and there was your second helping of pancakes. But Luzern Custer didn't go off half-cocked. Made a survey of the field, worked carefully and made a wonderful model. Then resigned from his regular job with the National Cash Register and launched his revolving table. Failed. Miserably. But he wasn't licked. He invented a motor-propelled miniature automobile for children. He got all excited about the possibilities that millions of excited children would want it. It failed too. Mothers said they were not going to allow their children on such a contraption. So he took the car, put bumpers on it and set the thing on an enclosed track and sold it to the outdoor amusement parks. Instant success. He did so well that he patented another invention and marketed it—a motor-driven chair for cripples. An immediate success. He sold one to the King of Egypt. Mr. Custer is a highly successful inventor and manufacturer. This is what he told me: 'I have been an inventor and manufacturer for 25 years. I have made money. But my average has been only one successful article out of ten.'"—Custer, II, did more than attend the Institute. He got his degree, and as I recall it, designed a clever steam flowmeter in his senior year. Nice going, L. L.!

The New York *Times* of November 7 printed this about Charles Edison: "The New Jersey Governor-elect, Charles Edison, son of the late Thomas A. Edison, the inventor, was 50 years old last August. He is an ardent New Dealer and was both Assistant Secretary and Secretary of the Navy before he sought the New Jersey Governorship. A soft-spoken man of medium height, Mr. Edison likes hard work and long hours, traits inherited from his illustrious father. After he was graduated from the Massachusetts Institute of Technology he went to work in the Orange (N.J.) laboratories of his father, and when the inventor died in 1931 he assumed the presidency of the Thomas A. Edison Industries at West Orange."

"Gray-haired, but youthful looking, Mr. Edison has long been a friend of President Roosevelt. His experience in public affairs began during the World War by aiding his father, who was chairman of the Naval Advisory Board. He came to these tasks from a long period of education at Cartaret Academy in Orange, Hotchkiss School in Connecticut and M.I.T. At that time Mr. Roosevelt was Assistant Secretary of Navy."

"When Claude A. Swanson became New Deal Secretary of the Navy, Mr. Edison was made his assistant, and he became an expert in matters affecting yards, docks and naval stations. He became Secretary last January. After his

1913 Continued

resignation in June he was succeeded by Colonel Frank Knox, a Republican. Previously Mr. Edison had served as director of the National Emergency Council, the New Jersey Recovery Board and the Regional Labor Board. He married Carolyn Hawkins of Cambridge, Mass., March 27, 1918."

Ken Hamilton, II, writes from Montclair, N.J.: "The Mallory Hat Company ran into a lot of labor trouble, strikes, and so forth, which, with poor business, necessitated retrenchment and subsequent cuts in salaries and personnel. I was assistant to the president, and the authorities decided he would have to run his own job, so I took a temporary job with Paul Bartel in the Judson and Thomson Manufacturing Company of Waltham, Mass. He is a classmate, Course II, but I didn't know he was with this company or who the Thomson company was until I was contacted by their attorneys. I worked with the company attorneys as a consulting engineer on a Federal Trade Commission case which the government was investigating in relation to the tubular rivet industry. I traveled all over the country interviewing their customers in Milwaukee, Chicago, Cleveland, Detroit, New York, and New England. We finished collecting data for them, and the case is under further investigation now."

"I joined the Isolantite Company of 343 Cortlandt Street, Belleville, N.J., as general manager last August. This company manufactures the highest grade ceramic insulators for radio transmission and radio receiving sets as well as transmission lines for broadcasting stations. We are now working two and three shifts on Army, Navy, and Signal Corps orders as our products furnish the insulation for these radio sets. The work is very interesting and covers all phases of sales, management, and production. Tell the boys I'd be glad to see any of them if they are down this way."

"I guess we've all moved about more or less. I've gone from machine tools to shoes and plant engineering, then to sales and management in paint, varnishes, waxes, and adhesives, then to the hat industry, consulting work, and finally to being general manager of a plant for making ceramics. I hope I've found the end as far as moving is concerned, but with the country in its present condition, you never can tell."

Thanks, Ken, for that nice letter; Bill Ready should need a lot of those good insulators. I've been trying to get a letter from Ralph Rankin, VI, since last fall. He now writes: "... Your letter didn't catch up with me until some time during the first week of December in Seattle. ... Don't forget that my job takes me all over the country and into Canada, and that my mail is usually chasing me."

"I wish I could see more of the fellows as I travel, but unfortunately I am out of touch with most of the Class. Occasionally I see or hear from Jack Coe, who is head of the Naugatuck chemical division of the United States Rubber Company. He was with me on a ten-day cruise last summer and we had a grand time. He is

just as cheerful and just as good company as ever. Gene MacDonald and I get together for lunch once in a while; he does some traveling, too, but, as befits a prominent engineer, in a more leisurely style than I can manage. The last time I saw him was a few months ago when we collided in the Union Station in Washington. Joe Strachan, as you know, has been transferred from New York to Pittsburgh. Bunny Brett is on deck for any kind of gathering of the clan in New York and hasn't visibly lost a hair or changed an iota from the good old reliable cuss he was thirty years ago. In the same span of time my hair has thinned out alarmingly and changed to a beautiful snow white! I'm not a granddaddy yet, nor in Pa Ready's class, but I am a great-uncle, which is something to which some dignity should be attached. My pair of daughters are now eighteen and fifteen years old. Jean, the oldest, is at school away from home and will go to college this year; in fact for some time we have been going through the painful process of choosing the one ideal college. Of course I want her to go to M.I.T., and her mother wants her to go to Radcliffe, so we are certain those are two places she has long ago crossed off as possibilities."

"Ernie Weller is still with the American Telephone and Telegraph Company in New York, and I see him in an elevator once in a while. R. E. Leonard, who came to the A. T. and T. when I did, has been out seriously sick for some time, and the last news I heard of him was not at all reassuring. I haven't seen Pete Haynes for some months, but I believe he is still in New York and a partner in Wellington and Co. Why don't you pry a letter out of him?"

"It was nice to get the news about you in your letter and to know that things are going well with you. Why don't you save an hour or so on one of your New York visits and let me have a look at you? Maybe I still think I can lick the stuffing out of you, and you had better find out! Life has been pretty busy for me, particularly during the last few months because of an unusual amount of traveling. ..."

On the train from Worcester to Springfield I met Janet Mattson, who was returning to Mount Holyoke after the Christmas holidays. Janet is very attractive and interesting. She scolded me humorously for saying in the notes that she was a sophomore. I am glad to correct this error. She is a junior.

I regret to report the deaths of Gaillard Rembert, VI, Algernon T. Gibson, III, and John Gustin Lanning, II and VI. Miss Esther G. Rembert, Gaillard's sister, wrote this letter: "Thank you for your kind letter of December 3. I regret too, that you did not know Gaillard was close by when you were in Greenville, as I am sure he would have enjoyed seeing you. I suppose the information you'd like is what Gaillard did after he left M.I.T. He worked with the Columbia Gas and Electric Corporation until the Mexican trouble, when he went to

the border. At the beginning of the World War he enlisted in the Navy as an ensign. He remained in the Navy until he was retired on account of his health in 1932. He then had the rank of lieutenant commander. After an illness of eight years he died in Tryon, N.C., on June 30. ..."

The December 14 issue of the San Francisco, Calif., *Chronicle* had on the front page: "Amazing Career, A. T. (Al) Gibson, Financier and Clubman, Dies; Algernon Tuttle (Al) Gibson, millionaire financier and clubman, died ... at Dante Hospital after an illness of six weeks. He was 49 years old and had been president of the Lawrence Warehouse Co., the largest field warehouse concern in the world, for more than 15 years. He was also president of the Bay Cities Transportation Company and the Erikson Navigation Company. His wife, Mrs. Emily Weaver Gibson, his brother, Dr. Arthur C. Gibson, were at the bedside. Death was attributed to overwork. Gibson's career was one of the most amazing in recent San Francisco history. He rose from a laborer to a millionaire in five years." — Gus Lanning, retired, died in Corning, N.Y., on November 28. — FREDERICK D. MURDOCK, *Secretary*, Murdock Webbing Company, Box 784, Pawtucket, R.I.

1914

Art Peaslee has been staying in Boston much of the time lately because Mrs. Peaslee has been hospitalized there. Fine progress is now reported, and Art hopes to have Mrs. Peaslee back in Hartford again before these notes appear in print. — Don des Granges was recently inducted into the Commercial Club of Boston, which is one of Boston's very old and dignified dinner clubs.

Bill Price, who has been doing sales-counselor work in Chicago with offices in the Field Building, found that the work of one of his principal clients, the Rock-Ola Manufacturing Corporation, was so interesting that he decided to close his own office and accept their offer to become vice-president and director of sales. The Rock-Ola Manufacturing Corporation is located in Chicago, and is one of the old and well-known phonograph manufacturers, particularly of the coin-operated type. The company also has a healthy volume of furniture business, operating one of the outstanding wood-working plants in the Middle West. One of Bill's expansion plans is to enter the radio-phonograph-recorder game. Best wishes, Bill, from all of us. — H. B. RICHMOND, *Secretary*, General Radio Company, 30 State Street, Cambridge, Mass. CHARLES P. FISKE, *Assistant Secretary*, 1775 Broadway, New York, N.Y.

1915

Latest reports are that the newest applicant for Course I distinction, Master Gerald Rooney, is doing well and so is his mother. Gifts, if any, for the baby should be of a distinctly juvenile nature to prevent appropriation by his father. Look ahead and try to visualize what those future summer camps and class re-

1915 Continued

unions are going to be like if he follows the example of his illustrious father, Pirate George Thomas Rooney.

Time marches on! In addition to the sons of classmates now at Technology about whom I told you last year, the following boys are at the Institute: Robert V. Coleman (son of Alfred V. Coleman), Richard C. Maconi (G. Vincent Maconi), and James B. Weaver, 2d (Easty Weaver). — Allen Abrams has a daughter who is a freshman at Wellesley, and I'm hoping to see Allen when he visits her.

For a long time Speed Swift, the honorable politician from New London, N.H., was our leading man for getting newspaper publicity. But recently, with the judicious use of his reunion gift of red paint, Charlie Norton is crowding Speed. Charlie's flock of sheep and sheep ranch have both increased tremendously in size, so that now he has regular write-ups in the *Vineyard Gazette* of Edgartown, Martha's Vineyard, Mass., and on October 30, the *Standard-Times* of New Bedford had a story about Charlie, his sheep, and his dog. In fact, on the island Charlie has acquired the name "Angora Charlie." With some classmates and friends, I've visited Charlie at his 105-year-old ancestral farm. He and Bee Norton are doing a great job and liking it. Success to them! — Notice how the column is fast approaching zero. "Help Azel," and keep it alive! — AZEL W. MACK, *Secretary*, 40 St. Paul Street, Brookline, Mass.

1916

While listening to Edwin C. Hill's report of the news over the radio on Tuesday evening, January 21, many classmates must have been as surprised as your Secretary was when Mr. Hill, in his clear baritone voice, spoke of Vannevar Bush, President of Carnegie Institution of Washington, D.C., as having indicated that 6,000-horsepower air-cooled engines are entirely within the realm of possibility in the near future. Mr. Hill went on to say that when a man like Mr. Bush makes a forecast of this sort, it is news. Not content with this statement, Mr. Hill went on to speak of Mr. Bush's educational background and experience, saying how he maneuvered through Tufts, Harvard, and M.I.T. in three and one half years, which is probably a record. Hill concluded his interesting remarks with the statement that probably many of those who remember their sessions with Mr. Bush will remember that unusual ability of his to wiggle both ears.

It is your Secretary's sad duty to report the death of Jack Wells. His death occurred on April 19 in Rochester, N.Y. He was one of seventy-two classmates who attended our twentieth reunion at Saybrook, Conn., in 1936. Jack attended Baylor University in his home town of Waco, Texas, for a time, and then spent two years at the University of Texas. Subsequently he came to Boston, attended the Institute, and was graduated from Course I. Upon graduation he enlisted in the Ordinance Department of the United States Army as an inspector. Shortly after the World War he married

Bessie Clum of Rochester, N.Y. At that time he was employed by the Millers Falls Tool Company at Millers Falls, Mass. After a short period he moved to Rochester, where for more than twenty years he was in the employ of the Eastman Kodak Company. He was active in a number of Rochester clubs and organizations. He leaves his wife; a daughter, Nancy; and a son, Jackson B. Wells, Jr. We shall all miss Jack Wells at our coming reunion, and it is sad, indeed, to have to record this break in our ranks.

In the February issue of the *Scientific American* prominence is given to a brief article on a book recently published by Joe Meigs. The book is entitled *Time, the Essence of Patent Law*. The review reads as follows: "Since the element of time pervades the entire patent structure, the author, for convenient reference, has compiled, in a single volume, information and legal data regarding the association of time with invention, Patent Office procedure, and litigation. It is not possible, within the limits of this review, to include specifically the topics which come within the scope of the publication; however, it thoroughly covers the field from the conception of invention through all related matters of patent procedure wherein the subject of time applies. The author has carefully set up his citations and the book is completely indexed for ready reference. We recommend it as an important addition to the library of a patent lawyer, for the Patent Departments of corporations, and for inventors." — There will be many of us at the June reunion who will be glad to hear Joe hold forth and tell us how he hit the jack pot by becoming an author.

Walt Binger breaks into print again in the New York *Herald Tribune* for January 13, in an article which indicates that the group known as the "committee on civilian protection in wartime" will work under Mr. Binger and the national committee appointed by Secretary Stimson. This subcommittee of the American Society of Civil Engineers will co-operate with the War Department. In commenting on the work of this committee, Walt had this to say: "It is natural that the engineers responsible for the construction and maintenance of public and private projects affecting the whole civilian population should work very closely with leaders of the armed forces in such times as these."

I quote from a letter from Ed Barry: "In the summer of 1939 I satisfied a long-held ambition to go into business for myself. I quit as general sales manager of Riley Stoker Corporation and hung out my shingle at 80 Federal Street, Boston, as consulting engineer, specializing in industrial power plants. I have had no cause to regret this move, as I have had all the business I could possibly handle. My intention was to confine my activities to New England, as I felt that with so many plants in this region operating obsolete power-plant equipment, the opportunity was great to remodel and modernize them. Fate was kind in bringing me two clients, one in Vermont, the other in

Massachusetts, both paper mills requiring new boiler equipment. One of these jobs is now nearing completion. Construction is just starting on the other. Before either job was well along I was extremely fortunate in being selected as consultant on power-plant improvement and extension at the Bogalusa, La., plant of Gaylord Container Corporation. Vert Young, our classmate, who is executive vice-president of this company, was largely responsible for my selection. His company is spending six million dollars for improvements at this plant, and about one and a half million dollars of that sum are to be spent in the power plant. This job, therefore, is quite a feather in my cap. High-pressure boilers and turbine generators designed to my specifications have already been purchased.

"During the last four months I have commuted frequently by plane between Boston and New Orleans and have seen a good deal of Vert. He has a big job that keeps him busy night and day. He and his charming wife have entertained me frequently at his home in Bogalusa. He is the same old Vert, a glutton for work, but getting a big kick and a lot of fun out of it." — In exchange for this publicity, Ed, the reunion committee will take no excuse for your not planning to attend our forthcoming reunion at the Oyster Harbors Club on June 7 and 8.

As secretary of the reunion committee, I want to take this means of reaching all 1916 readers of these notes. The committee has been expanded to include all seventy-two classmates who attended our last reunion at Saybrook. You who showed the inclination and found the time and money to attend that reunion are counted on as a nucleus for our twenty-fifth. Come yourself, and by all means get busy and contact a few of your old classmates and friends to make our June affair the biggest and best ever. — JAMES A. BURBANK, *Secretary*, The Travelers Insurance Company, Hartford, Conn. STEVEN R. BERKE, *Associate Secretary*, Coleman Brothers Corporation, 245 State Street, Boston, Mass.

1917

Leon McGrady wrote from New York on New Year's Day: "I have been here for the holiday season. Yesterday afternoon Enos Curtin, Dad Wenzell, Dick Loengard, Dean Parker, Dix Proctor, Frank Maguire, and I met at the Commodore Hotel for a suitable good-by to 1940 and an equally suitable hello to 1941. On Friday, I had lunch with Ray Brooks and Charlie Miller, both of the Bell Telephone Laboratories. A great addition to our luncheon party was Steve Brophy '16, who told us the general plans for the twenty-fifth reunion of the Class of '16. Steve very graciously offered to tell the 1917 committee for the twenty-fifth reunion what to do and what not to do." Later, in Washington, Mac saw Potts Mehaffey at a party given by I. B. McDaniel, who was celebrating his promotion to commander in the Construction Corps of the Navy. Mac reported that Potts was moving to a new house he re-

1917 Continued

cently built in Alexandria; that Webb Gokey was expected at McDaniel's party but didn't appear; that W. M. B. Freeman '20, who is in the procurement division of the Treasury Department, was on hand.

From a certain well-known member of the Class, now resident in suburban Philadelphia, comes a report of Mac's political sagacity in connection with the recent election. Apparently our Philadelphia friend was "had." Says he, "I gave him odds of five to three on Pennsylvania." In this connection, here is a report from a Rochester community gossip sheet that Dud would do well to ponder over before 1944: "The smartest person we have met recently was neighbor McGrady. Here's someone who calls his shots beforehand, and we don't mean maybe. After some discussion, he asked us what we thought the electoral vote would be. Disregarding the scientific approach to the question we opined Mr. Willkie by 288 electoral votes. Just a quick essay on our part, as you might say. With which Gallup McGrady came back at us with the following in so many words. 'I'll give you a slip of paper and don't look at it until after the election.' So saying he took a piece of paper and after quickly writing on it, folded it. We had heard of these slips of paper before. One of the older residents of Washington has been playing with them for some time and apparently there is something in it. For behold when the election was over we looked at the morning paper to read Mr. Roosevelt had 451 electoral votes. And thinking of the little slip of paper, we hurriedly took reference to it, to discover that it read Mr. Roosevelt with 450 electoral votes. Of course, following the early papers other totals came in, but we think that first prize for accuracy in prophesying goes to McGrady." And how do you like that, Mr. Bell?

Dud also reported that he had recently been in Chicago attending the furniture mart. "It is still the same old selling racket with me, although harder and faster because I have added two more factories to the list. A few nights ago I enjoyed a super de luxe dinner at the University Club with Dick Whitney, who had just returned from a gunning trip in Arkansas."

Stan Krug writes from Cincinnati as president and general manager of the Cincinnati Ice Manufacturing and Cold Storage Company that business is improving and that as a hobby he is dabbling in automobile-club work. He has been a director of the Cincinnati club for eleven years now and is supposed to be an expert on traffic and safety, but, he says, "It doesn't seem to mean anything, as Cincinnati still has a poor record." — Stan Cooper is manager of a new factory being placed in operation by the Johns-Manville Corporation at Zelienople, Pa. His new home address is 130 Centennial Avenue, Sewickley, Pa. — John Babbitt writes from 403 Rawlings Street, Washington Court House, Ohio, that: "the Baltimore and Ohio Railroad calls me a supervisor. The work consists of keeping the main track smooth enough so that passengers do not get too badly jostled and freight

does not get damaged. The track extends from Columbus to Midland City, Ohio, a distance of about seventy miles. I have been with the railroad since March, 1921." John reports also that Frank Conaty is a lieutenant colonel in the Army and is stationed at Fort William McKinley, Rizal, P.I., with the Twelfth Quartermaster Regiment.

Walt Beadle is still with the Du Pont company as assistant director of development and commutes from Germantown to Wilmington. Walt reports that Howard McQuaid, who is also with Du Pont in Wilmington, recently saw Claude Roberts, but further details are missing. Phil Cristal, director of railroad bond research at the home office of the Northwestern Mutual Life Insurance Company in Milwaukee since 1933, writes: "I commute to New York on the average of twice a month and get a kick out of life in general. The M.I.T. crowd here has been enlarged wonderfully during the last seven years, the additions being largely younger graduates taking training courses at Allis-Chalmers, Bucyrus-Erie, Chain Belt, and other plants. Unhappily, there are no '17 men in the city. For this reason I take particular pains to advise those members of the Class who roam around the country to favor me by making themselves known when they are near. Chicago is only eighty-five miles away, and a week end in Milwaukee could, it seems to me, be useful either as relaxation from previous endeavors or as a strengthening process to enable one to meet the rigors of trade, commerce, or what have you! McGrady always stops to check in when he is in town. The Dean (His Eminence) appears to have forgotten his little friend Phil, as I often hear of his appearances in Chicago *after the fact*. Pfui on him! As part of my New York duties, I frequently see Gus Farnsworth. He is one of the country's experts on commercial flying. I also see Dad Wenzell, who is dean of the public utility bond deal experts of Wall Street. His advice is (as it always was) mature and conservative."

John Holton is technical assistant to the production vice-president of the Carrier Corporation at Syracuse, N.Y. The company is doing a considerable amount of defense work, and John expresses himself as still enthusiastic about the work and associations after more than ten years with the company. John's son is a sophomore at Yale, and his daughter a freshman at Mount Holyoke. On a recent trip to New Haven, John saw Barney Dodge, whom he reported as looking hale and hearty. — Wendell B. Ford is assistant controller of the Ludlow Manufacturing Associates in Boston and lives on Trapello Road, Lincoln, Mass. — Stan Dunning is vice-president and general manager, Canadian Waterpaints, Ltd., and Wesco Chemicals, Ltd., 2100 St. Patrick Street, Montreal, a new address. Stan writes: "I have now been here for two years, establishing this business, and I have enjoyed it extremely. Living in Montreal is certainly different from living in New York City, and I much prefer Montreal."

Dick Whitney, some of whose activities were reported by Dud Bell above, says he is still trying to convince advertisers and their agencies that *Redbook Magazine* is their best advertising medium, but that he is also trying to figure out what happens to a fiction magazine when the country goes "all out." — Gus Farnsworth has been very active as a member of the consulting engineering firm of Coverdale and Colpitts in New York. Gus reports that the firm has been engaged in work in Canada and Central America as well as in the United States. — George Igleheart is vice-president and chief engineer of Stapling Machines Company, Rockaway, N.J., manufacturers of automatic machinery used in making boxes, and George finds his job a fascinating one as it involves designing, developing, and sales engineering as well as manufacturing. He continues: "The defense needs of the country have caused more than a little pressure on our business. My family of two girls and two boys, one married, two in college, and one in prep school, largely account for my extracurricular activities, with a rare fishing trip and a little golf thrown in."

Jim Anderson, New England sales manager of the Dictaphone Sales Corporation, writes: "I haven't been anywhere since last April. I did manage at that time to get four weeks off, which I spent largely in driving through the southern states. We left here on the first of April taking in most of the states south of here and east of the Rockies. The only state I didn't get into was Florida, and the reason I didn't go there was because I wanted to maintain the record which I have of being the only person in metropolitan Boston who has not spent at least some part of the winter in Florida. I drove down a road which was right on the state line, but I was just ornery enough not to step across it. The only Tech man I have seen within a year is Howard Bailey who is a consulting engineer with offices at 177 State Street, Boston."

Stanley Hyde, since 1927 principal of North Yarmouth Academy, Yarmouth, Maine, writes: "I have just returned from the annual family pilgrimage to Punta Gorda, and, confronted with a stack of mail which had accumulated since my departure on December 18, wish I might be sitting comfortably under the palms answering the same. I'm still very much on the job from September to June, however, aside from the Christmas interlude. I continue to be impressed by the gradual and apparently reasonably healthy growth of the South and am looking forward to the day when — with both girls through their schooling — we can settle down to a tourist business in Maine in the summer and a tourist home or camp in Florida in the winter months. For many years my dictum has been, 'no teaching after fifty-five,' but with the prospect of having to help pay for this war my best laid plan bids fair to 'gang a-gley!'"

Ray Brooks has recently returned to work as a member of the technical staff of the Bell Telephone Laboratories in New York after a year out on account of

a major spinal operation. Ray reports that he is fast getting back into shape and his note suggests in no uncertain terms that the defense program, especially that aspect of it concerned with aviation, is very much in his mind. Ray says: "I personally hope to be doing a realistic something about it as soon as I am physically able again, which, I hope, is a matter of but a few months."

Larry Gardner is with Lever Brothers Company in Cambridge in the sales supervision department, and deals with special activities, such as one-cent sales, premiums, and so forth. His son is a freshman at the Institute, and Larry reports that he occasionally sees Ed Doherty who is chief chemist of Lever Brothers.

The Senate recently confirmed the nomination of Ed Warner as a member of the Civil Aeronautics Authority for a six-year term expiring on December 31, 1946.

Along with all this month's notes, Phil Hulburt sent a brief word of his own from which may be gathered: (1) that he is carrying temporarily an unusually heavy teaching load; (2) that an assistant or two has been laid up with the grippe; (3) that Phil himself has had an attack of grippe; and (4) that his typewriter broke down. For all this the editors should be grateful; if these generous notes survived such handicaps, what volume without them? — **RAYMOND STEVENS**, Secretary, 30 Charles River Road, Cambridge, Mass. **PHILIP E. HULBURD**, Assistant Secretary, Phillips Exeter Academy, Exeter, N.H.

1918

Last month you all went back on me; therefore I had to go back on you! No word from you, no word from me! — From the Alumni Office I received a letter signed by Richard W. Smith '21 regarding the death of Harold McLaughlin which was recorded in the January notes: "Through an Atlanta friend I have just heard of the death in Atlanta on November 3 of Harold Clark McLaughlin, IV. Mac was one of the mainstays of the Atlanta Alumni Association of the M.I.T., a bachelor who could be relied upon to bring a good-looking girl to the annual banquet or the bean dinners, and a competent officer who served one or more terms as secretary and as president. He was architect at various times for several large Atlanta construction firms, the latest, I believe, being Robert and Company, Inc."

"Several years ago Mac was severely injured in an automobile accident that left him incapacitated for several months, but I don't know whether this had anything to do with his death. His friend wrote that Mac was taken ill on a business trip to Savannah and was moved to the Emory University Hospital in Atlanta, where he died several days later. He will be greatly missed by his many Atlanta friends."

At Christmastime along came a card from Enslo S. Dixon, V, from his home in Port Arthur, Texas. He enclosed snaps of his wife and his nineteen-year-old daughter, who is a freshman at the Uni-

versity of Arkansas. He told me that after a trip to California, which he is probably taking now, he is to be in New York. Here's hoping we get a chance to see him.

— Wendell Kayser's nineteen-year-old son has been called into active service with the Navy and is now stationed on the S.S. *Eagle*. David had to drop his work as a freshman at Columbia to do this but is to be allowed to take his mid-years on shipboard to get his credit. — Our old friend Don MacArdle is at present on the west coast for his company, and there is a possibility that he will be transferred there. It will be hard for that family to uproot itself from the East.

On December 30 the New York group had a luncheon at the Hotel Duane. As I was in Boston on vacation at that time, I knew nothing of the luncheon until it was over. Pete Sanger wrote: "The following handsome gentlemen put in appearances: Julian Avery, Tom Brosnahan, Shorty Carr, Pete Harrall, Ash Joslin, Nat Krass, Bill Neuberger, Ev Rowe, Art Smith, Granny Smith, and while not so handsome, at least passable, Pete Sanger. Your genial Subsecretary admonished them to speak firmly to hesitating contributors to the organ fund." Pete, I reported on this about three months ago. Just about half the required amount has been subscribed, and much of that is in the bank now. There is plenty of room for more to come in and soon. I talked with Maggie during the vacation period in Boston and he tells me that another notice of the fund will be sent out sometime in the spring. Those who have not contributed or pledged, *please* come through.

Boston group please note! L. Franklin van Zelm is now located at 326 Commonwealth Avenue, Boston. — The first changes of rank, due to the present situation, in our Class have just come through. John A. Steere, Fort Sill, Okla., and Edward B. McCarthy, United States Army, 415 Insurance Building, Denver, Colo., have stepped up from major to lieutenant colonel. Congratulations!

Please send news along, or the Class will draw a blank as it did last month. Don't blame me, I want to keep notes in The Review, but when everyone is silent, I cannot make up things out of thin air as our President can. — **GRETCHEN A. PALMER**, Secretary, The Thomas School, The Wilson Road, Rowayton, Conn.

1919

George A. Irwin, who has two girls and a boy in high school and one boy and girl in grammar school, writes that he is now a captain, commanding Company D, 30th Quartermaster Regiment at Westover Field, Chicopee Falls, Mass. He was a Diesel sales engineer for the Witte Engine Works in Kansas City, Mo., until called to active duty on November 1. — Eugene L. Klocke writes that he is a practicing attorney with the firm of Klocke and Ravner, Liberty Bank Building, Buffalo, N.Y. — A note from Stuart J. Hayes states, "more waist line, less hair, otherwise no changes since last report." — An announcement was re-

cently received covering the opening of the newly erected office and factory of Arklay S. Richards Company, Inc., at 72 Winchester Street, Newton Highlands, Mass.

Lewis E. Hartman's address is now 1305 Homestead Lane, Lancaster, Pa. — Robert S. Bolan has now moved from Bay Head, N.J., to 46 Torrington Drive, Rochester, N.Y. — Laurence M. Dalton, formerly in Milwaukee, Wis., is now with the Liberty Mutual Insurance Company, Redwood and Light, Baltimore, Md. — Louis J. Grayson has moved from Chevy Chase, Md., to the Westchester, 4000 Cathedral Avenue, Northwest, Washington, D.C. — Ervin M. Kenison has moved from East Orange, N.J., and his new address is 2553 Collis Avenue, Huntington, W.Va. He writes that he is doing valuation work for the American Gas and Electric Corporation on their property in West Virginia. — Pedro A. Piza's address is Post Office Box 627, San Juan, Puerto Rico.

William L. Root, Jr., '35, Secretary of the Berkshire Technology Club, forwarded a clipping announcing several appointments at the new Pittsfield General Electric Company plant. Alfred W. Hough, who is superintendent of the distribution transformer department, will continue in that capacity and was appointed manufacturing engineer of that department as well. He is president of the Stanley Club, a General Electric social group. The clipping reads in part as follows: "Mr. Hough, a Massachusetts Institute of Technology graduate, has been with the General Electric Company since 1922. Prior to his appointment as superintendent of the distribution transformer department in 1933, he was in the wage rate department and the production planning and control departments, being supervisor of both."

Frederic A. Baker wrote to congratulate us on our column and to request the address of Bob Durland. — Your Secretary would appreciate hearing from anyone in the Class who knows the whereabouts or present address of Charles C. Cook.

More news of Don Kitchin and his family as relayed by his wife: Bob is now at Harvard where he plans to go into photography. Don, Jr., is in the machine shop of Simplex Wire and Cable Company. He is about halfway on the list for the draft and may be called in July, but in the meantime he is getting well trained as a machinist. According to Mrs. Kitchin, Don, Sr., leads a very active life — skating, hiking, music committee at church, and so on. He is secretary of the men's club and chairman of the evening study group of the College Club, as well as being on the Library Visiting Committee at Tech. Charles is a junior at Harvard, concentrating on Spanish.

A letter from Hosmer C. Jones reads as follows: "I served in France in 1918 and now belong to American Legion Post 96, of West Hartford. At present I teach industrial arts in the Alfred Plant Junior High School in West Hartford, and night classes at the high school. I am on the

1919 Continued

staff at the Teachers College of Connecticut (New Britain) as a critic teacher in industrial arts and am treasurer of the West Hartford Teachers' Federal Credit Union. I have a son in his third year at the University of Connecticut and a daughter working in one of the insurance companies in Hartford." — EUGENE R. SMOLEY, *Secretary*, The Lummus Company, 420 Lexington Avenue, New York, N.Y. GEORGE W. McCREERY, *Assistant Secretary*, 131 Clarendon Street, Boston, Mass.

1920

The day before writing these notes your Secretary lunched with Buck Clark, Jim Gibson, and Perk Bugbee — a very prosperous and lively-looking trio, considering their ages. Buck reports that Jack Coyle is very busy with his important work at the Bullard Company, makers of machine tools in Bridgeport, Conn., and Bunk Talcott is also very busy running the highly successful needle-bearing department of Torrington Manufacturing Company.

The most interesting and attractive Christmas card received by your Secretary was from Mr. and Mrs. K. B. White, who apparently brought their cards with them from France. K. B.'s business card reads: "K. B. White & Company, Industrial Consultants, New York, Glasgow, and Paris," and the New York address is 330 West 42d Street. His home address is 714 Crown Street, Morrisville, Pa. — I have also received a very attractive announcement from José Augusto Padilla-Vega announcing the arrival of baby José Augusto, at Tegucigalpa, Republic of Honduras, on December 21. The Class extends congratulations.

We are indebted to C. A. Clarke, Assistant Secretary of '21, for the news that Commander and Mrs. Edward Ellsberg of Hanford Place, Westfield, N.J., recently held a tea in honor of their daughter, Mary Phillips Ellsberg. — Frederick W. Pennoyer, Jr., has been promoted to captain in the Navy and is with the Bureau of Aeronautics at East Orange.

Ken Clark's present address is 8 Midlands Gardens, Bronxville, N.Y. Herb Lockhart is in Philadelphia at 6620 Lotus Road. Fritz Boley is with the Air Reduction Sales Company, Chicago, and his home address is 7244 South Coles Avenue. Ed Brickett is now living in Marblehead. Paul Corbin is in Toledo, address 1823 West Bancroft Street. Josh Welch is living in Barrington, R.I., address 58 Rumstick Road.

From the exceedingly attractive and comprehensive directory of the Technology Club of Chicago I gleaned the following information: Larry Boyden is living at 1215 Cherry Street, Winnetka, Ill., and is an engineer with the Protection Mutual Fire Insurance Company. George I. Brown is consulting management engineer with Brunker, Jones and Page, Inc., Conway Building, Chicago. Norman Dawson is senior civil engineer of the sanitary district of Chicago. Foster Doane is vice-president and treasurer of the Magnaflux Corporation in Chicago. Frank J. Foley is a patent lawyer with

offices at 29 South LaSalle Street. Simon Freed is associate professor of chemistry at the University of Chicago. Grant French is with the Pennsylvania Railroad, Chicago office. Sid Griffin is assistant engineer of the Public Service Company of Northern Illinois. Elmer Grismer is vice-president and sales manager of R. G. Haskins Company, machine tools. Franklin Hunt is chief engineer of the carbon-dioxide division of Liquid Carbonic Corporation, Chicago office. Merrill Knox is consulting engineer with the Illinois Commerce Commission, 160 North LaSalle Street, Chicago. Raymond S. Perry is vice-president of the Ingersoll Milling Machine Company, Rockford, Ill. Bob Rowe is chief architect and engineer of Montgomery Ward and Company. William D. Shepard is general manager of Wright and Lawrence Peau Seche Sales, Inc., cosmetic manufacturers. Dode Spiehler is assistant chief process engineer of the Pure Oil Products Company and lives at 1632 Ashland Street, Evanston.

While a goodly proportion of the Class has always subscribed to *The Review*, the combination of Review subscription and Alumni Fund contribution is bringing a larger number into the circle. I am very anxious to make these notes the means of maintaining and strengthening class morale, since our big twenty-fifth reunion is looming in the not too distant future. I'll promise to have notes in every issue of *The Review* if you will do your part and provide the material. The only reason they haven't appeared regularly is simply that I lack the imagination to manufacture them out of whole cloth. Please give me a hand. — HAROLD BUGBEE, *Secretary*, 7 Dartmouth Street, Winchester, Mass.

1921

Have you answered Ray's broadcast letter on the plans for our Tremendous Twentieth? The Griswold Hotel on Eastern Point, New London, Conn., a fine resort hotel overlooking Long Island Sound and offering every indoor comfort and outdoor enjoyment, is the scene of the festivities which start on Friday evening, June 6. The celebration will continue through Saturday and Sunday until we leave for Alumni Day at Cambridge on Monday, June 9. Conveniently reached by train or car from New York, Boston, and the general eastern area, the Griswold can also be reached directly via the Long Island ferry to New London; yachts can come right up to the hotel, and there is an airport two miles away. Fill in the questionnaire and return it *now!* Then call up at least five local fellows on the list sent to you and arrange a party for the big June anniversary.

Victor C. Hassold, II, is the recipient of our very sincere thanks for his hospitality. We enjoyed a pleasant and instructive visit to the Steel Heddle Manufacturing Company, 2100 West Allegheny Avenue, Philadelphia. Vic is production superintendent of the plant, which makes not only a wide variety of steel heddles but also just about every metal and wood accessory for looms and other cloth-, metal-, and glass-weaving equipment.

Precision and speed are ingeniously teamed to produce every conceivable form and size of the astonishingly large number of items which industry demands, and we can well understand pride in this and the southern plants operated by the company. Vic has modestly waited all these years to tell us that he has achieved the outstanding distinction of being the father of triplets, who are just about to celebrate their eleventh birthday as this is printed. Bob, Dick, and Peggy are fine husky youngsters who keep Vic and Mrs. Hassold stepping, but, be it said, also seem to keep them young. Vic has promised to attend the reunion to celebrate our twentieth and his twentieth with Steel Heddle, and we'll all have the opportunity to congratulate him in person.

Robert M. Felsenthal, X, has now completed his move from Chicago to Philadelphia, where he is located at 4640 Roosevelt Boulevard, as vice-president in charge of operations for Sears International, Inc., the export organization of Sears, Roebuck and Company.

David O. Woodbury, VI-A, is about to break into the list of best sellers again. Writing from his Ogunquit, Maine, home, Dave says: "Here is my annual statement of progress and prospects. I have been exploring the Colorado River and building Boulder Dam here. It is all done — 165,000 words of American engineering epic for publication by Dodd, Mead and Company, New York, during March. I spent six months last winter in California getting the dope, most of it around Imperial Valley and the Colorado canyons, camping in the desert, traveling nine thousand miles through California, Arizona, and Nevada. I went down the Grand Canyon on muleback, down some of the unheard-of canyons to such strange places as Lees Ferry, Eldorado, Cibolo, Parker Dam, Chuckawalla Valley, and points between — all to get the atmosphere of the Colorado.

"The result is a complete historic account of the *Colorado Conquest* (that's the name of the book) from the days of the Spaniards to the coming of the American engineers, the settlement of the desert, construction of irrigation, the battle by the Southern Pacific to exclude the river from the desert, the final victory, the years of political intrigue and struggle with the government which followed, the ten-year battle in Congress to pass the Boulder Canyon Act, and finally the five-year saga of Boulder Dam. The book is illustrated with photographs and my own sketches of engineering details.

"During this writing time I have finished two full-length plays (with a collaborator) and several magazine articles. One of the plays, *Escape Into Glory*, on the life of Emily Dickinson, is scheduled to appear on Broadway this spring. I also have a third play which is being groomed for Broadway and Hollywood appearances next year. Right now I am vacationing — rewriting two plays, packing to go back to California to do two articles for *Reader's Digest* and to look into the material for a new book for Houghton, Mifflin Company on the Los

Angeles aqueduct system. I'm playing with the idea of doing a biography of Dr. Millikan or Charlie Chaplin, whichever proves more amenable. I shall plug up the chinks with a movie scenario or two and a new play with my collaborator in California." Here's how, Dave. Hope you can find time for a real vacation with the gang at New London in June.

J. G. Kaufman Company is the name outside an attractive establishment at 20 Province Street, Boston. From the inner sanctum of his new home, Joseph G. Kaufman, X, President and Treasurer of the organization, carries on the administration of this well-equipped outlet for distributing radios, washers, refrigerators, and a host of electrical appliances, home conveniences, and gifts. Joe has been associated with the electrical appliance industry in an executive capacity for the last fifteen years. His technical background has been the means of rendering valuable service to industrial companies in air-conditioning and refrigeration problems. Most any day now we expect to get his announcement of an all-wave pocket radio complete with frequency modulation and television. What a treat for that trip to New London on June 6!

United States Army promotions have come to two members of the Class. Richard Donovan is now brigadier general instead of lieutenant colonel. He is stationed at the Eighth Corps Area Headquarters, Fort Sam Houston, Texas. A change from captain to major has been announced for Patrick H. Timothy, Jr., I, Ordnance Corps of Engineers, Washington, D.C.

The new addresses of the month are: Major Harold O. Bixby, United States Signal Corps, Room 3402, Munitions Building, Washington, D.C.; J. Ernest D. Clarkson, II, 14 Lexington Avenue, Upper Darby, Pa.; Arthur Esner, II, 1245 Meridan Avenue, Miami Beach, Fla.; Albert E. Fowler, Jr., V, 14 Essex Street, Newburyport, Mass.; Eugene A. Hardin, I, 3414 Warden Drive, Philadelphia, Pa.; Eliot W. Higgins, II, 8925 East Jefferson Avenue, Detroit, Mich.; Harold C. Johnston, 32 Jenny Lind Street, North Easton, Mass.; Edward P. Molloy, II, 5490 South Shore Drive, Chicago, Ill.; Captain Don G. Shingler, I, Fort Benning, Ga.; Harold F. Stose, XIV, 3342 Indian Road, Toledo, Ohio.

Get your gang together for the Tremendous Twentieth and write Ray at once! — RAYMOND A. ST. LAURENT, Secretary, Rogers Paper Manufacturing Company, Manchester, Conn. CAROLE A. CLARKE, Assistant Secretary, International Telephone Development Company, Inc., 137 Varick Street, New York, N.Y.

1922

William C. Roberson has left for active service at Camp Devens as major in Squadron A. — Bill Bainbridge reports that one does not need to travel around to get business nowadays, so he is going to stay close to the main office of United States Gypsum Company in Chicago, where he will be glad to receive any of

his classmates and present them with the key to the city. — John Bower is manager of the Texas Petroleum Company with headquarters in Bogota, Colombia. John has been with the Texas company since 1923 with the exception of a few years during which he worked with the California Petroleum Corporation of Venezuela and the Antilles Petroleum Company of Trinidad.

Yard Chittick reports that Tom Shepherd has been made the Pittsburgh district manager for Cities Service Oil Company. Prior to this change Tom was district manager for the same company in Boston. Yard also reports that the Institute has inaugurated for sophomores in Course XV a subject called the "field of business management." The purpose of this is to give sophomores a cross section of many fields of endeavor, and to do this Professor Schell '12 has rounded up a group of Alumni in different fields to deliver short talks. Among those who have already appeared on this lecture program is Dana Sawyer of the Federal Reserve Bank in Boston, who talked on foreign-exchange control, credit analysis, and bank examination. John Goodnow, President of Hardware Products Company of Boston and Bob Tonon, President of Peter Gray Corporation of Cambridge, both appeared as lecturers on the imposing subject, "Presidents of Industries." Yard Chittick says that it was a great source of satisfaction to him to be able to give the boys the works when, much to his surprise, he was asked by Professor Schell to talk on patent law.

Undoubtedly most of our Class are beginning to feel acutely the effects of the war and our own defense program. There is not going to be time for much socializing, but it will be of mutual interest and help if our classmates can keep in touch with each other as they undertake vital activities in connection with the industrial and defense program. One easy way to do this is through the columns of The Review, and your Secretary will do his utmost to take sufficient time out from the metal business to put into these columns information which you send — CLAYTON D. GROVER, Secretary, Whitehead Metal Products Company, Inc., 303 West Tenth Street, New York, N.Y. C. YARDLEY CHITTICK, Assistant Secretary, 77 Franklin Street, Boston, Mass.

1923

Perhaps because the notes were a bit thin last month, Jack Keck writes, "Can't you include a little plea in the notes to have the fellows write to you, or to me if it's more convenient? I'd at least like to hear from those New Yorkers and Jerseyites to whom I've in many cases written a little note asking how goes it. — You can make a good example of O. L. Perkins, XIV, who is still in Hartford, Conn. I asked him for news several times, but he just won't write. His mother, however, thinks, 'Jack was a good friend in M.I.T. days,' so I got a letter from her the other morning, telling me about O. L.'s twins and all their musical efforts, which are accompanied on the flute by O. L. The Per-

kins family live in West Hartford, and the big boy, O. L., goes in to the Aetna Casualty and Surety Company every day."

Jack further reports that his old pal Stuart MacDonald is still in Rochester, N.Y., with Frosted Foods Sales Corporation, according to Christmas correspondence. Jack says Stuart has a nice family and is enjoying the East after some years in Florida for his company.

A letter to Jack from C. D. Grover, Secretary of '22, brings us up to date on another classmate: "Steve Kiehel was a member of your Class, although he did some further graduate work and had been to Yale prior to coming to the Institute. I knew Steve at Tech and then became well acquainted with him when I lived in Buffalo, where he was living at the time. Steve is an excellent chemist and has been in the paint industry ever since he left the Institute, first in Philadelphia, then with Creo Dipt Company, Inc., in North Tonawanda N. Y. About six years ago he went to Cleveland as production manager for the Billings-Chapin Company, Inc., manufacturers of high-grade paint specialties. Within the last year, Billings-Chapin was merged with the Glidden Company, and Steve was offered charge of one of the Glidden plants in the Middle West.

"Meanwhile, Steve had been working up a side line. Ten or twelve years ago he stumbled on a formula for a lotion or salve which had unusual properties to heal the skin afflictions and skin dryness that is prevalent on the hands of workers in paint and oil. He began making some of the stuff in a kettle on the stove in the kitchen and supplying jars of it to friends. Two or three years ago one of his doctor acquaintances urged him to go into the venture on an even bigger scale, because he had found it was the best thing for children's skin rashes and babies' diaper rash. As a result the cream, which Steve has called CitroX, was accepted by leading baby clinics and maternity hospitals in Cleveland, and from there it has spread around the country so that it is standard, I believe, in some four hundred maternity hospitals. It is not advertised but is recommended by physicians and can be obtained in an increasing number of drug-stores.

"At any rate, when faced with the prospect of changing his residence from Cleveland to some other place, Steve and his wife decided to concentrate on the sale and manufacture of CitroX. They formed a corporation called CitroX Laboratories, Inc., located in Chesterland, Ohio, just outside of Cleveland, where Steve has a farm. CitroX is making headway. Steve is getting a great kick out of it, and although I guess the factory is still in the kitchen, it is paying its own way. — Steve has three children, two of them twin girls, and I had the pleasure of being brought up to date by a brief visit with them in Cleveland in October."

T. E. Huffman was recently transferred from Beaumont to Austin, Texas. He is chief engineer of construction and design in the state highway department. —

3

1923 Continued

J. H. Westren reports his home address is 33 Glenrose Avenue, Toronto, Ontario, Canada, and that he has two boys, aged seven and four, and a little girl just two years old. He is factory liason officer for the Dunlop Tire and Rubber Goods Company, Ltd.

According to the New York *Journal of Commerce and Commercial*, W. E. Gladding has been appointed manufacturing superintendent of the new nylon unit of E. I. du Pont de Nemours and Company, in Martinsville, Va. He was to assume his new duties in November with temporary headquarters at Seaford, Del. Gladding has been with the Du Pont company since 1925, mostly in Buffalo, where he was located up to 1932 when he was transferred to Old Hickory, Tenn. Since 1935 he has been at the company's plant near Richmond, Va.

José C. Bertino wrote Professor Charles E. Locke '96 that he is trying to interest Technology men in Buenos Aires in having a lunch party once a month. He initiated the first meeting on Friday, December 13, with the hopes that such luncheon gatherings might become regular affairs.

Paul A. Ryan died suddenly in his home in New York on December 25. He was chief statistician of the American Gas Association and had been head of the association's statistical staff since 1927. A large delegation of the staff and many friends attended funeral services at St. Boniface Church, New York, on December 28. Burial was in Susquehanna, Pa. After leaving the Institute, Mr. Ryan was power sales engineer for the New York and Queens Electric Light and Power Company. In 1925 he was a prize winner in a nation-wide contest sponsored by Bonbright and Company, Inc., for the best papers on the development of the light and power industry. He took the Harvard Business School course in public utility management, and received a master's degree in 1926. He supplemented his school work with consulting service on utility rates and market analysis.

Stanwood E. Whitcombe sent me a picture of his new home on the Countryway, in Egypt, Mass. He reports, "For some time it has been my wife's and my own desire to live near the South Shore but out of the city in a fairly large house with a barn and some land. Our lot is slightly less than two acres and has ten apple trees beside a small garden fifty by one hundred feet, in the rear of the house." Whitcombe is currently president of the Master Plumbers' Association of Boston and vicinity.

Newman Field reports: "Graduation may seem like many years ago, but little of note seems to have transpired in yours truly's personal affairs that would interest others of our Class. However, there is one exception. I was married to Gerold Wheeler on October 15; no fuss — just a private ceremony at Greenwich, Conn. — Remember Professor Seaver's famous illustrated lecture on Monte San Michele? There's the reason why I forsook the physics and electrical engineering work at Technology for architecture. I am now

registered and practicing in New York City." Field wrote from 5400 Fieldston Road, Riverdale, N.Y.

As an additional last-minute item from Jack, here's part of a letter from Tom Drew: "This summer Columbia University succeeded in persuading me to return to teaching, which I left when Du Pont got me away from the Technology staff in 1934. Consequently, since September 15, my headquarters have been in the northeast corner of the third floor of the Chandler laboratories — Room 368 — where I hold forth as associate professor of chemical engineering. I am living in White Plains, chiefly because it was the first place I found suitable living quarters to rent. I didn't quite dare to try to file the three children (all girls, ages one and one-half, six, and eight) away in a New York apartment after six years in the country outside Wilmington." — HORATIO L. BOND, *Secretary*, 457 Washington Street, Braintree, Mass. JOHN M. KECK, *Assistant Secretary*, 207 Bloomfield Avenue, Bloomfield, N.J.

1924

A note from Bill Sturdy, formerly of the Bell Telephone Laboratories, Inc., staff in New York, indicates that he was called for active duty with the Signal Corps early in December. He was originally in command of the 8th Signal Company at Fort Jackson, S.C., but was transferred in January to the command of a company in the 51st Battalion at Fort Monmouth, N.J. He reports meeting two other Technology men, Magee '25, a colonel, and Monderer '39, a lieutenant. — The Secretary boldly guesses that Colonel Magee may be John Magee, Jr., erstwhile editor of *The Tech*. If so, the colonel should write us confirmation.

George Parker has returned to Boston and is engaged in making engineering and industrial surveys for an engineering organization with headquarters in the Statler Building. — Secretary-Treasurers in Technology Clubs are Doug Elliott of the Southeastern M.I.T. Association in Birmingham; Royce Greatwood '25, Technology Club of Southern California in Los Angeles; Bill Lamm, Technology Club of Mexico, Mexico City; T. K. Hsueh, Technology Club of Shanghai; and Doc Hancock, Technology Club of Kentucky in Louisville. — FRANCIS A. BARRETT, *General Secretary*, 50 Oliver Street, Boston, Mass.

1925

Our notes for this month consist of a few facts and several guesses. The guesses are based on changes of address received and are selected as being newsworthy either through previous appearances of the respective classmates in these notes or for other reasons which will appear when they are given.

First, however, the facts: George Mason, who is a captain in the Ordnance Department read the notice appearing in *The Review* requesting Alumni who were in active service, or who should be called at a later date, to take pains to keep their class secretaries or the Alumni Associa-

tion notified of their whereabouts and activities. While, unlike some, his address change was only from one room to another in the same building, the United States Custom and Courthouse in St. Louis, Mo., he acted with commendable speed. He is connected with the St. Louis district ordnance office, and may be reached at 935, the above-mentioned building. We doubt whether we will be able to receive any lengthy letters or news items from him, however, as his letter, aside from the salutation and signature, consisted of four typewritten lines and two clippings stapled to the foot of the sheet. This would indicate that he and the district office in which he works are kept extremely busy by the pressure of ordnance work in that vital central area.

Now a few lines from a clipping from the December 11 *Financial World* under the cutline accompanying a photograph, "General Shoe's President, W. Maxey Jarman": "Son of a shoe manufacturer — born in Nashville, Tennessee. Attended local schools and the Massachusetts Institute of Technology. . . . Started business career as an office clerk with the Jarman Shoe Company, the predecessor of the present General Shoe Corporation. . . . Elected secretary and treasurer of the company in 1925 and . . . to the presidency of the company in 1932. . . . Primary outside interest: church work. . . . Hobbies include motion picture photography and music — plays the piano." Max is a nonassociate member of our Class. We are always glad to receive such clippings, either through the regular channels or through the kindness of some Alumnus. The fact that Max became president of his company almost nine years ago is unimportant, since we frequently do not receive such information until long after the event takes place, and even though late, it helps complete the picture of what our Alumni are doing.

Now for the address changes: Frank Fricker, a long-distance track star during our undergraduate days and now a member of the Alumni Council, has moved from Birmingham, Mich., to Franklin in that state. The coincidence of his first name, Franklin, and the name of the town should help those of us without the benefit of complete address files to remember his new location. — Heraclio Alfaro, whom we recall as having recovered from a collision with a fire engine in Framingham, Mass., a number of years ago, has moved to the Hotel Sheraton in Springfield, Mass., from his previous address in Boston. — Jeff Roberts, who last year reported that he was working for a power company in Vereeniging, South Africa, is now connected with the Modderfontein Dynamite Factory, Post Office Northrand, Transvaal, South Africa. Although we have not received a letter giving details, it seems clear that his transfer of employment has something very definite to do with the war effort of the Union of South Africa.

We give the following address change very gingerly and with the lingering suspicion that it may be temporary or

seasonal, recalling the mix-up we had last year when we reported Jack Dunbar as having "removed" to Florida, only to find that he was simply avoiding the Arlington, Mass., winter weather. At any rate, here it is: Trafton Mason has moved from Bridgeport, Conn., to 706 South Brevard Avenue, Tampa, Fla. Don't sue us, Trafton!—William L. Gilliland, now a lieutenant, is on duty at the Chemical Warfare School, Edgewood Arsenal, Md., having gone there from Orono, Maine.

The active connection of many of our classmates with defense work, as hinted by the notes of last month and this, leads your Secretaries to suggest that wherever two or more of the Class are stationed in the same district or are assigned to the same military or naval unit, that they report to the Secretary or Assistant Secretary their doings and any gossip concerning other members of the Class which may turn up in their talks. A very interesting method would be for them to write a joint letter. We shall be glad to print these letters, or as long a portion of them as space will allow, in the next issue of *The Review* after they are received. The letters printed last month and this are only a sample of what we may make of this opportunity. — HOLLIS F. WARE, *General Secretary*, 3 Aquavia Road, Medford, Mass. F. LEROY FOSTER, *Assistant Secretary*, Room 6-202, M.I.T., Cambridge, Mass.

1926

I have talked with George Smith, chairman of our fifteenth reunion committee, and he reports that Boxwood Manor, a very elegant establishment in Old Lyme, Conn., has been selected for the reunion. The outing will start on Saturday morning, June 7, and will continue until Sunday evening. The group will then return to Cambridge for Alumni Day on June 9. How about it; shall we see you there?

The register of important events this month includes the announcement of the engagement of Edith Ross Pardee of Hazleton, Pa., to Francis R. van Buren. Miss Pardee was graduated from Miss Hall's School and from Smith College and studied at the Sorbonne in Paris. She is a member of the French department at Smith. Van was graduated from Princeton before coming to the Institute, where he received his degree with the Class. At the present time he is administrator of the Children's Hospital in Cincinnati. — The second item is the announcement of the birth of Eric Stefan to Dorothy and Theodor Müller on January 7. The Müllers live in New Milford, Conn. Ted is a prominent industrial designer, and he takes time off from his professional duties to lecture on industrial design at the Institute. — The final announcement, important but incomplete for lack of information, is that of the birth of a daughter to Katherine and Guy Frisbie. We do not at this writing have the name of the young lady. To all of the principals of these important events, we extend felicitations and good wishes.

Willard Edwards has been working on a calendar revision as announced in the *Air Craftsman* published by the Lockheed Aircraft Corporation for which he works. The Edwards calendar contains 91 days in each quarter, with one extra day following December 31 each year and one extra day following June 31 every four years. — Donald C. Hooper of Airport Road, Greenburg, Pa., has been named manager of the newly formed market-development department of the Westinghouse Electric and Manufacturing Company, East Pittsburgh. — JAMES R. KILLIAN, JR., *General Secretary*, Room 3-208, M.I.T., Cambridge, Mass.

1927

The long-distance department starts the ball rolling this month with word from Fritz Glantzberg. We have all come to expect Fritz in a new place each time we hear from him, and now it's from Cali, Colombia. Captain Fritz is technical adviser to the Colombian Air Force, as member of a United States military mission, for a term of two and a half years ending in November, 1941. His wife and three children live with him. Quoting Fritz: "Cali is now an overnight Panagra stop between South America and Panama. I work at the field where the plane lands and will appreciate any Tech men's looking me up. The airport manager can direct them to me."

Next call from South America comes from J. M. Pinkerton, VI, who is district superintendent, Pedernales district, Standard Oil Company, Caripito, Venezuela. Pinky and his wife were planning a two months' trip to the States this winter to be in the New York area either in late February or late April.

Getting a little nearer home, we find Jack Eldert still in Providence and still in the mechanical-parts and -equipment game. Jack is sales engineer, assistant manager, or assistant boss, as the situation demands, for Machine Parts Corporation. Jack is married and has one daughter, aged three. — John Drisko, also, writes from Providence and says that he has lived "in an awful lot of places and a lot of awful places" the past thirteen years. His pay check comes from "Uncle, via the United States Engineer Office in Providence," where he heads the hydraulics and reports section in their flood-control and other projects. John reports that Don Horton has taken a year of active duty with the Engineer Corps. He was in the United States Engineer Office in Boston and is now in Washington.

George Cunningham is in Pasadena, where he is western industrial sales manager for National Oil Products Company (animal and vegetable oils). George and wife (Betty May) have been, and continue to be, extremely busy bringing up a family of three girls and one boy. — Walter Burger, of 3740 Lake Shore Drive, Chicago, has gone into industrial design on his own hook. He isn't married. — William Sadtler, who became '27 via West Point, is a major in the United States Army Ordnance Department. His job (a mighty big one right now) is

keeping score for all production and procurement for the artillery division, trying to balance delivery schedules, and furnishing information to all senior officers. Sadtler is living in Arlington, Va.

Lee Miller is with the New York Telephone Company at Elmira, N. Y., and is in charge of construction of various kinds and types for the district within a one-hundred-mile radius. He has also built a house for his wife and two children, a house well equipped to entertain '27 men, he reports. Lee puts in a special call for word from or about High Fever Paul Ivanich. — From Boston, Dick Hawkins reports a change in jobs. He has gone with Yale and Towne Manufacturing Company as district sales manager for New England and New York State (except New York City) and is concerned with pump sales. Dick may be found at 1284 Beacon Street, Brookline. — RAYMOND F. HIBBERT, *General Secretary*, care of Johns-Manville Corporation, 22 East 40th Street, New York, N.Y. DWIGHT C. ARNOLD, *Assistant Secretary*, Arnold-Copeland Company, Inc., 222 Summer Street, Boston, Mass.

1928

Thanks to O. B. Denison '11 we have a clipping from the Worcester *Gazette* announcing the engagement of Holmes Iveson of 21 Institute Road, Worcester, and Virginia Gould. Both Holmes and Miss Gould are employed by Loan, Swift and Brigham Envelope Company.

Recently the papers have been full of news about "half-cent meals." From coast to coast newspapers and magazines featured the announcement of a new concentrated cereal which Robert S. Harris "says could nourish a man for a half a cent a day." This new cereal is made of skim milk, whole wheat, oats, soybean meal, and corn and contains all the vitamins but one. Dr. Harris announced his discovery to members of the New England Dental Society at their annual convention in Boston. He pointed out that the ideal use of the new cereal would be as a daily supplement to the customary three meals a day. Daily rations of less than one ounce of the mixture would keep a person well and yearly would supply a necessary minimum of nutrients equal to that supplied by an estimated \$150 worth of ordinary foods. The value of this contribution is brought home when one realizes that dietary deficiencies which now force 20,000,000 Americans to go through life undernourished could be practically wiped out by this new formula at a cost of half a cent a day! Congratulations, Bob Harris!

Best wishes to J. Clifton Edgar and Josephine Deshler on their recent wedding in New York City. Edgar received his master's degree in 1929 and is now a traffic engineer with the New York Telephone Company. — Thomas G. Harvey's present address is Monarch Steel Company, 545 West McCarty Street, Indianapolis, Ind. The company manufactures cold-finished steel bars, and Tom is enjoying a fine new position as their metallurgical engineer.

A. S. Dempewolf is assistant to the advertising director of the Celanese Corporation of America, 180 Madison Avenue, New York City. Dempe has joined the famous New York Seventh Regiment of the state guard and is now a corporal. Since he's in the officers' training group, he has drill two nights a week. — GEORGE I. CHATFIELD, *General Secretary*, 6 Alben Street, Winchester, Mass.

1930

We are happy to extend the congratulations of the Class to three of our classmates. In January, Doris Hudson of Brookline became the bride of Charles May, VII, who was graduated from Harvard Medical School in 1935 and is now an instructor on the staff of that school. — Fluque Rowzee, X, and Bob Crowell, XV, are proud fathers of babies born last July within three days of each other. A young lady is the Rowzee baby, while the second Crowell child is a boy named Parker, born on your Secretary's birthday. The coincidence of name and birthday should make me some kind of an honorary godparent.

Bob Phelan, VII, and his bride are at home on Cliff Street, Canajoharie, N.Y. — George Lawson, VI, writes that both he and his wife have been enjoying the skiing season by making week-end trips to the White Mountains. Gerrie and he have recently moved from Salem to Marblehead, Mass., although he is still affiliated with the Hygrade Sylvania Corporation in Salem.

By unanimous vote of the Boston members of the last reunion committee it has been decided to make an annual donation of ten dollars for the next five years toward an emergency fund known as the Alumni Athletic Fund, administered under the supervision of the Advisory Council on Athletics. A number of the older classes and a few alumni clubs have contributed in previous years. Our net profit on the reunion was \$48.71, and it was felt that the money would do a lot more good in the Alumni Athletic Fund than in our treasury. This fund is not to be confused with the Alumni Fund to which we are asked to contribute individually, but is one used to meet a few of the unexpected items of expense not covered by the regular M.I.T. Athletic Association budget. Those of you who were undergraduate managers will surely understand how much real good will come from this money.

From the Register of Former Students we learn that Elizabeth Rossman, IV, is now Mrs. Edward Everett and resides in Washington, D.C. Bill Howard, I, is in New York with J. Walter Thompson Company. Myron Smith, VI-A, returned from California to the Cambridge office of the General Radio Company, while Everett Cofran, IV, has gone west to Seattle. Hal Spaans, XV, is a captain in the Coast Artillery at Fort Monroe, Va., and I suspect that the Army has claimed Al Perkins, XVII, whose new address is North Falmouth, Mass., the site of Camp Edwards. — Your Secretary will be glad to pass along any and all news concerning

changes in address and activity resulting from national defense. — PARKER H. STARRATT, *General Secretary*, 1 Bradley Park Drive, Hingham, Mass.

1931

The April notes will contain information relative to our progress in lining up men in various sections of the country to round up '31 men for the ten-year reunion which is to be held on June 7 and 8. A spot in Connecticut is now receiving careful consideration as the location. Any and all in the vicinity of Boston who are interested in assisting us to organize and promote the reunion are urged to write your Secretary or telephone him at President 0462.

News has reached us of the engagement of Harriet Fellowes Bent of Taunton to H. Sheldon Smith. Miss Bent attended the Mary C. Wheeler School in Providence and was graduated from the House in the Pines in Norton. Sheldon is now located in Philadelphia. — The engagement of Eleanor Avery Brown of Lewistown, Mont., to Robert C. Leithead of Seattle has been announced.

From the *VI-A News* we hear that "John McNiff . . . has made the great decision that leads to matrimony. The happy occasion took place on the 12th of October." John is with the Hygrade Sylvania Corporation in Salem.

Wyman Boynton was tendered a farewell dinner by a group of his friends in Portsmouth, N.H., prior to his departure for service in the Army. Wym entered as a lieutenant in the Army Reserves at Fort Belvoir, Va. — John Strong is another '31 man in the Army. He is a captain and instructor of antiaircraft artillery, Coast Artillery School, Fort Monroe, Va.

Jack Brown is now in the Navy, but we have not heard just where he is located. Jack has been with the A. C. Lawrence Leather Company of Peabody since graduation, but he was a member of the Naval Reserves and was called for action. — Charles Basinger's new address is Naval Ordnance Laboratory, Navy Yard, Washington, D.C. — Harry D. Kamy is a captain at the Engineer School, Fort Belvoir, Va. — Cato D. Glover is a commander with the Naval Intelligence, Navy Department, Washington, D.C. — Major Harold H. Carr's new address is Air Corps, Sacramento Air Depot, McClellan Field, Calif. — Lieutenant Colonel John P. Richter is at the Air Depot, France Field, Canal Zone. — BENJAMIN W. STEVERMAN, *General Secretary*, 14 Russell Street, Atlantic, Mass.

1933

It was quite a surprise to have someone accept our invitation to start the year right by giving us some news for *The Review*, and our thanks go to John King, I, for doing it. John mentions that thirteen seems to be his lucky number, for his daughter arrived on that date last August. "We have named her Diana Roberta. We should like to show her to, as well as see ourselves, any classmates who may find themselves in the vicinity of

Trenton." If you want to accept his invitation, he is living at 341 Bellevue Avenue, Trenton, N.J. Thanks again, John.

We have learned of the arrival of a son, Philip, in the family of Otto Putnam on October 5; and of the marriage of Raymond O. Burzynski to Carolyn C. Smith of Portsmouth, N.H., on December 28. The couple will live in Beaumont, Texas. — Also married on the twenty-eighth were Albert Patterson and Mary D. Talman of Washington, D.C., who will live in Niagara Falls, N.Y.

Rene J. Marcou has announced his marriage to M. Elizabeth Nash of Vancouver, B.C. He is assistant professor of mathematics in the Boston College graduate school. — The marriage of Bernard D. Lucey, IV-A, to Katherine M. Driscoll of Hingham, Mass., was announced in November. The Luceys are living in Wollaston, Mass. — That's all for now, but we hope some more of you will drop us a line. — GEORGE HENNING, JR., *General Secretary*, Belmont Smelting and Refining Works, Inc., 330 Belmont Avenue, Brooklyn, N.Y. ROBERT M. KIMBALL, *Assistant Secretary*, Room 3-104, M.I.T., Cambridge, Mass.

1934

We have received a letter from George Best, XIV, which says: "I've felt so badly about the lack of '34 notes in *The Review* that I've finally decided to do my bit, little though it may be. Most noteworthy, undoubtedly, is my marriage on June 29 to the former Grace U. Rapp of East Greenville, Pa. Our honeymoon through Vermont and Maine ultimately made me the butt of many wise (and otherwise) remarks, for somewhere along the line I picked up a pernicious bug which kept me in bed for over a week and got me back to work a week and a half late. According to some, the story was an excellent ruse for lengthening the vacation, but according to me, it was a darn shame.

"I hope all of my classmates have been spared the drudgery of refinishing floors before moving into their respective love nests, for I found that even more arduous than that experimental freshman physics course to which we were subjected long years ago. The floor job was finally over and done with, and we've had great fun sliding around corners on the rugs ever since.

"By the time this word gets out, I will have completed nearly seven years of metallurgical research for the New Jersey Zinc Company. I'm sorry to have to admit that I have uncovered nothing sensational, but have surely found the varied program of an investigation an interesting one. Recently, considerable time has been occupied with metal-powder production from which have evolved three patent applications now somewhere in process.

"I am able to report on only one other member of our Class, Merton Neill and I see each other once in a while. His name will be found on the letterhead of the patent law firm of Pennie, Davis, Marvin and Edmonds, New York City.

1934 Continued

Mert recently forsook the Brooklyn alleys to move into the country, where his present address is Alcott Road, Mahwah, N.J." — Many thanks, George, for the news, and congratulations on your marriage. We are sure that the hard luck you had on your honeymoon was really a good omen. It was the low point of your marital career, from which you will continue to climb to levels of greater happiness.

Johnny Wood recently joined the ranks of the benedicts way down south in Alabama. He was married on December 23 to Genevieve Williams, daughter of Mr. and Mrs. Clark Williams of Birmingham. Johnny is a marine engineer with the Ingalls Shipbuilding Company of Birmingham, who are pioneering in the construction of all-welded steel ships. *Bon voyage*, John! — Irving Geltman was planning to march altarward in the near future with Goldie Bazoll, daughter of Mr. and Mrs. Louis J. Bazoll of Roxbury, Mass. — Raymond Levine has made notable progress with Sears, Roebuck and Company in Boston. He is now floor manager of the Brookline Avenue store. If any of you drop in there and want fast service, just look for Ray. He keeps things moving.

Well, fellows, we have had our cycle of news accumulation — a boom, a crash, and the start of recovery. We are now on the upward swing of our cycle, so have confidence that every letter you invest will reap a great return in gratitude. It's a bull market, men, so throw a little this way. — JOHN G. CALLAN, JR., *General Secretary*, 184 Ames Street, Sharon, Mass. ROBERT C. BECKER, *Assistant Secretary*, Chile Copper Company, Chuquicamata, Chile, S.A.

1935

Well, fellows, it looks as if it will be a meager column this time. There is only one matrimonial item to be reported: Roger Hammond and Dorothy Grant, of Montclair, N.J., are engaged. Roger has been with Mack Molding Company in Wayne, N.J., for several years and is now a production control supervisor. — Only letter of the month came from Murray Brown and was written on the inside of a Christmas card. You would think that Brownie had become an efficiency engineer from the way he saves on writing paper. He reports that he is still doing well with the Northern Pacific Railway and is equally proud of his work and his family. The former consists of railroad construction and maintenance.

Cy Williams rated quite an article in the New York *Sun*, which related his successes as a builder of homes on Long Island. Together with his partner, who handles the sales end of the business, Cy has built a town by the name of New Salem. We understand that the number of houses is approaching the hundred mark, and that the owners are very well satisfied. More power to you, Cy!

Karl Achterkirchen has left Washington, D.C., for the more favorable climate of Hollywood, Calif. We wonder whether he will give his wife the jitters by be-

coming interested in the local delightful scenery found at the several movie studios. — Alan Duff has been transferred to Wilmington, Del., by Du Pont. Sid Grazi has been called upon by the Army to do his stuff and is now at the Aberdeen Proving Ground, Md. — Hart Livingston has left Babcock and Wilcox Company and is now with the Bureau of Ships, Navy Department, Washington, D.C. Franklin Lovering has been transferred to League City, Texas, by the Phillips Petroleum Company. — Bob Perkins has been transferred by the Navy Department from Cavite, P.I., to Bremerton, Wash. Leslie Richardson has been transferred from Bremerton, Wash., to Washington, D.C. These Navy boys certainly get bounced around frequently. — Bob Richtmyer has left Stanford University and is now in Arlington, Va. — Leon Temple is now working for Short Way Lines, Inc., in Toledo, Ohio. — Bill Thompson has left Moody's Investors Service and is now working for the Mutual Life Insurance Company of New York. Lee Tolman is another that has been called upon by the Army to save the country for democracy. He is assigned to Fort Belvoir, Va. — ROBERT J. GRANBERG, *General Secretary*, care of W. C. Voss, 9 Old Town Road, Wellesley Farms, Mass. RICHARD LAWRENCE, *Assistant Secretary*, 111 Waban Hill Road North, Chestnut Hill, Mass.

1936

It always is an unpleasant task to have to report the death of one of our classmates. This time I am especially grieved, because Arthur was a personal friend of mine and a loyal correspondent to these notes. Arthur E. Wells, Jr., XIII-C, died on December 1 as a result of an automobile accident. The information I have is meager, but I understand that Art was injured when his car struck a tree in Pine-wald, N.J. He had been employed as the assistant to the marine superintendent of the Seas Shipping Company in New York. We all deeply regret his passing.

A short time ago Phil Vincent was in town, and he gave me some news about a few of the Course X gang. Several of the boys had been out to visit him recently, among them being Don Kenny and Jimmy Vaughan. Don has recovered from all the trouble he had with his hip, and after returning to work for Du Pont for a while he switched to the Kendall Oil Company of Bradford, Pa. Jimmy is still a process development engineer for the Standard Oil Development Company. Bill Jordan lives in Tiverton, R.I., and works for the Firestone Rubber and Latex Products Company in Fall River. Rudy Ozol is another of the group with the Standard Oil Company of New Jersey. Finally, Lou Young is at M.I.T., and I understand he is an assistant in the Department of Economics and Social Science. Phil, by the way, is a research chemist with the Johns-Manville Company at Manville, N.J. I had one piece of news that I was able to tell Phil: On December 14 at Berlin, Md., Vernon Osgood and Charlotte K. Bethards were made husband

and wife. They have set up housekeeping at the Foster Park Apartments, 3207-B8 Lancaster Avenue, Wilmington, Del. Vernon is still employed by the Du Pont company in Wilmington.

Once in a while I am fortunate enough to receive a letter. This month my letter was from Alice Hunter Kimball, who says she and George are bursting with pride because they "are the parents of a daughter, Prudence Bradstreet Kimball, born on December 11. Since she cannot follow in her father's footsteps (he went to Princeton), perhaps she will be a member of the class of 1962 at M.I.T." Alice continues, "In the main, the past four and one-half years have been rather uneventful: I spent the first two years teaching at the Riverdale Country School for girls. My tasks included classes in seventh and eighth grade math, first year algebra, chemistry, weaving, and tutoring in English literature, as well as serving as electrician for the many dramatic productions. . . . A technical education is a great thing. I also spent every afternoon on the athletic field refereeing field hockey or in the gym teaching basketball or badminton. . . . The last two years I have spent helping George, who is an assistant professor in the Columbia chemistry department. I have done clerical work, corrected papers and lab reports, and have done some research. One of my special tasks has been drawing the figures for his papers." The Kimball family is living at 121 Overlook Avenue, Leonia, N.J., where they are two miles from the George Washington Bridge.

We have the pleasure of reporting the birth of the second child of the Henry Cargens. Linda Cargen joined the family on January 3. Our congratulations! — Among the recent marriages is that of John Ogrig, XIII, and the former Henrietta Huus on November 9. John is an engineering designer for the Babcock and Wilcox Company in New York City. — Hamilton Migel, II, became a benedict a few days later, on November 16. The bride was Barbara Forsheew, and after a wedding trip to the South, the newlyweds have settled in Chicago, where I believe Ham is a representative for the York Ice Machine Corporation.

Here is news of an engagement which certainly was news to me. I quote from a society column of the December 17 San Francisco *Examiner*: "To Gabriele Detert, Junior Leaguer, Spinsters' member and Stanford Convalescent Home Junior Auxiliary, go laurels for one of the best guarded secrets of the season. Yesterday at tea, Gabriele switched the spotlight . . . to herself with the announcement that she was the affianced bride of Allen Woodward Horton, Jr. Totally unsuspected was the romance herald, the prospective bridegroom having left San Francisco last August after nearly a year's residence, for Washington, D.C., where he is engaged in the government's engineering training program. Betrothal promises were exchanged last month via correspondence, and in the latter part of February, Gabriele will go to Washington as a bride. . . . Gabriele, whose art

1936 Continued

talent is outstanding and has been well utilized by the various organizations in which she is active, is a graduate of Miss Burke's School. At the University of California she was a member of Alpha Phi sorority." — Another engagement which was announced recently was that of Bob Woodcock, XIII, and Frances Bennett of Brooklyn. — Ed Worthen, IV, is also engaged, his fiancée being Anita Pring of Lexington. — Finally, Miss Mary Westcoat, Wheaton College alumna, is affianced to Leo McKenney, who received his Ph.D. in chemistry with our Class.

With the increased activity in national defense, there is considerable news about members of our Class who are connected with the Army and Navy. John Fluke, VI, is on active duty with the Naval Reserve and is an assistant in charge of engineering design with the Bureau of Ships in Washington. Also with the Bureau of Ships is Albert Romberg, XIII-A, a lieutenant. Another Navy man is Charles E. Trescott, who is a lieutenant at the Puget Sound Navy Yard in Washington. Frederick Davison is a lieutenant at the Naval Air Station at Seattle, Wash. In the Army, we find that Al Bagnulo has been advanced to the grade of captain. He is still located at St. Croix, Virgin Islands. Wilbur M. Skidmore, a lieutenant, is stationed in the Canal Zone, and Robert C. Tripp is a lieutenant at West Point. Finally, we have word that Gerald Blackburn, IX-B, is now with the Canadian army in England.

A few other items have come to our attention: Ed Pratt, VII, now has his doctor of medicine degree and is working at the Children's Hospital in Boston. — Geoffrey Broughton, X, is at the Eastman Kodak Company in Rochester. — John Viola, XVII, in his work with Tremaglio Brothers, is now located in St. Mary's, Pa. Another post office? — Joe Kingsbury, VI, is now in New York City with the long lines division of the American Telephone and Telegraph Company. — Bill Healy, VII, is still with the New Hampshire Board of Health, but has been transferred to Exeter, N.H. — Bernie Gordon, I, is still interested in dirt engineering and has left Little Rock to study soil mechanics at Harvard, where he can be found daily in Pierce Hall. — The fellows here at Curtiss tell me that Frank Berman, I, has gone to work for the firm of Fay, Spofford, and Thorndike in Boston. — From the *VI-A News* we hear that Obie Falls has written an interesting article on how series capacitors reduce flicker caused by resistance-welding machines.

By the time these notes appear in the Review all members of the Class should have received complete information concerning our first reunion next June 7 to 9. We meet on Saturday afternoon at a hotel near Boston to participate in the various sports such as golf, tennis, croquet, and so on, which will be available, and to get reacquainted with each other. That evening comes the reunion banquet, when all our activities during the past five years will be revealed. Overnight accommodations will be provided at the hotel with breakfast served whenever we manage to

straggle down to the dining room. After a windup Sunday dinner we shall move to Cambridge in preparation for the Alumni Day activities the next day at the Institute. The complete cost of the affair will be less than fifteen dollars. Hope to see you there. — ANTON E. HITTL, *General Secretary*, 109 Shepard Avenue, Kenmore, N.Y. ROBERT E. SAWYER, *Assistant Secretary*, 55 Robinwood Avenue, Jamaica Plain, Mass.

1937

Well, fellows, here we are again, and I can hear a good many of you saying to yourselves, "It's a good thing for him (that's me) he got those notes in this month; I was just about ready to sit down and give him a piece of my mind!" I certainly wish you would; to me anything from the fellows is better than the nothing-at-all business I've been getting up to the time the December issue showed a complete blank. True, I could write lengthy notes about my own comings and goings and some conjectures as to what some of you more distant fellows might be doing.

Those of the boys who show up well on the correspondence end of things include Al Wolf, XV, who wrote from Riverside, Ill., telling in nice prose some of the doings in his section: "Last September I spent part of my vacation at my home in Dorchester and visited M.I.T. Larry Steinhardt, VI-A, was still at school. Art York had departed from the Technology News Service and is now working either in New York or Pennsylvania; I can't remember which. Eddie Lynn, X, is instructing and researching at the Institute of Paper Chemistry in Appleton, Wis.

"The night before I left for Boston, I met Phil Short, X-B, in Chicago. He had resigned his position with the Shell Development Company and came East with my wife and me. I heard from him in October, at which time he had not yet secured another position. Phil told me that Ro Ortynsky, X-B, was transferred from Shell's Emeryville, Calif., plant to its Wood River plant near St. Louis. Ro is now working with George Siegelman, X-B. Milt Lief is still with the Curtiss-Wright Corporation in St. Louis.

"On my return from the East, I stopped in Cleveland. While my wife and I window-shopped in Public Square, we bumped into Charlie Chase, XV, who is a sales engineer for the Harshaw Chemical Company and who wanted to know why my company did not buy more chemicals from him. I couldn't answer that, because I only work for Wishnick-Tumpeier, Inc.

"One Sunday morning Abner White, X-B, was listening to the radio when he heard, 'J. Albert Woll, United States Attorney General in Chicago, . . .' He then began to think about pore il'ile me and wondered if I were in Chicago, too. He picked up the telephone directory, found a name similar to mine, called up, and found me at the other end of the phone. My, my, what a small world, don't yuh think? Well, we had Abner and his wife over to dinner. She was Esther

Google, no kin to Barney, nor I to J. Albert. Esther comes from Meriden, Conn., and married il'ile Abner in June, 1939. Abner is a shavetail in Uncle Sam's procurement division of the Chemical Warfare Service and is stationed with the gas-mask manufacturing division of Johnson and Johnson in Chicago. Abner recently took over after resigning his position with Calvert Distilling Company in Relay, Md. Before that, he met Kerry Arabian, X, and G. Maurice Levy, X, draped over a hotel bar drowning their sorrows. Those two are in the Army now — Chemical Warfare Service for some time. Looks as if Shell is going to the dogs; Kerry also worked at their Emeryville plant. George, though, was in the hardware business with his dad in Boston.

"I have heard further from various and sundry sources: Bill Penn, X, is working with his dad in the latter's pharmacy in Lawrence, Mass.; Bob Rudy, XV, is working with William Filene's Sons Company in Boston. — I received a birthday card from Stan Zemansky and his wife. Stan is still with North American Aviation, Inc., on the west coast. The Zemanskys tell me that they have fixed up a fine home in Los Angeles. That can well be understood, for Anne is an architect ('39). — Certainly some of our classmates have something to say. At least they could inform us how they stand in the draft, and how it affects them. My number on the national list is 5024; 618 in my area. How about yours? Come, fellow draftees, give!"

That's an excellent idea, Al. Personally, I think we might well devote a section of the notes exclusively to those of our number who are either drafted or who are called for service from the Reserve Officers' Training Corps. We shall try it in an early issue — look for it. Later, Al sent me another letter, labeled "Flash," in which he reported that the Abner Whites have a baby girl, who weighed six and one-quarter pounds when she was born at 9:00 A.M. on December 10. Cracks Al, "Mother and child doing nicely; father, a shadow of his former self. Your keyhole correspondent, Al."

On January 13, I received a letter from Harry Sommer, X, whose official title and address are PFC (private, first class) Harry J. Sommer, Company D, First Candidates Class, Marine Barracks, Quantico, Va. He says: "The work is interesting and we have a swell bunch of fellows. I guess I am the only Technology fellow here. As you know, I was working for Shell Development Company at Emeryville, Calif. E. V. Piel '38 was 'batching' with me; then he went to work for Hercules and I joined the 143d Field Artillery. On December 1, I left the Artillery and went to the Marines. On Christmas Eve I married the former Margery Reibold. Jim Pearce, X, was a witness, and the ceremony took place at Trinity Church, Covington, Ky. We had a fifty-six-hour honeymoon at my parents' house in Deal, N.J., and then I rejoined my company here. My wife's sister is the wife of my former roommate, Ralph Chapin, XV. The Chapins are now at Port Elizabeth,

1937 Continued

South Africa, where Ralph is plant manager for a large United States company. . . . My wife and I expect to be reunited any week now, and we shall probably set up housekeeping in California. Since Marge is a pilot and I ski, we can teach each other." Sounds very good, Harry, or as I remember Ray Bliss's saying, "It listens well."

From South America's Huancayo in Peru each month comes a copy of the "VI-A Alumni News-Letter" containing bits of information about Technology men south of the Isthmus. It would also seem that the editor includes all news of boys, whether in South America or not, as the following shows: "Henry Blackstone, Hillyer and Blackstone, 8922 134 Street, Richmond Hill, Long Island, N.Y. . . . You want to know what I have been doing; well, you asked for it, so hold your hat, 'cause here it comes: (1) Just looking (no jobs); Boston to Seattle, summer, 1938; Seattle to San Francisco, September, 1938; San Francisco to San Diego, October, 1938. (2) Work in a sanitary engineering laboratory. (3) Sanitary engineering laboratory to San Diego Gas and Electric, February, 1939, as Junior Engineer. (4) San Diego to Denver, October, 1939, as junior engineer in the Bureau of Reclamation. (5) Denver to San Diego, November, 1939; founding of the firm of Hillyer and Blackstone, consulting engineers (partner, Curtis Hillyer, VI-A, '37). (6) San Diego to New York, March, 1940. The firm is now employed as consultants for the Fairchild Aviation Company.

"Those are the salient features; throw in some wedding bells around November, 1939, add some of the spices of life, stew for three hours, and you'll have the 1940 streamline model Blackstone. . . . *Flash:* We are happy to quote a recent bulletin, which announced the arrival of Henry Watson Blackstone on August 17.

"Bill Arnold, Cooper Union, Electrical Engineering Department, Cooper Square, New York, N.Y. . . . I spent a good part of the summer of 1938 looking for work but always heard the same answer. I got one or two offers but could not accept them, as my mother's health was none too good, and I therefore felt that I ought to hang around. Well, the opportunity for the job at Cooper came one day from the Engineering Societies, and I applied for it. Obviously, I got it. . . .

"My brother, Otto, quit Technology this last June with his bachelor's and found himself a job with radio station WNBH in New Bedford, Mass. His duties at present consist of building a new transmitter house on a small island — Crow Island — out in the bay about a quarter of a mile. The station is installing new transmitters of 3,000 watts frequency modulation and 1,000 watts amplitude modulation. One of Otto's jobs last week was to put on a diver's suit and descend to the murky depths to inspect a set of submarine cables that were being piped out to the island. He said it was great fun and that he would like to do more of it. He is now a veteran with more than two hours' diving experience behind him.

"The old Class sure has set up a noble record for getting married, as I notice that quite a few of us have taken hold of the grand old idea and attached ourselves to a maiden fair. Of course, I am speaking for myself when I say that. You undoubtedly have heard that I have been married now for over a year. Yes, the lady is the same now as when we were all back at the dear old Institute. Thus far, however, I have been successful only in raising a canary, and would probably still be doing so had the darn thing stayed around a while. But like all good birds this one got out of the window one day, and that was the last we saw of her. . . ."

Hugh Smith, II, one of those of us who dizzily staggered through steam lab, 2.20, *et al.*, sat down on a lonely New Year's Eve and dashed off a letter from Ardmore, Pa. He moans: "I have been reading all about our Class every month in The Review and have noted your appeals for news of other members. I have been guilty up to now of not writing one word about any of the boys I have seen, but this being the last day of the old year, I'm going to reform. I have been living just outside of Philadelphia, in several different places, ever since I got out of good old M.I.T. I have been working for the same company, too, and while I am not president, I still am doing all right and am at least learning something. I work for the I-T-E Circuit Breaker Company, manufacturers of electrical switchgear, a fine trade for a mechanical engineer. I started here in June, 1937, as an inspector in the machine shop, being the second inspector the company ever had in its history. I soon worked over my first boss and finally had eight men working for me. Then I got a chance to get into production, so I became a production man in October, 1939. I stayed in that position until November, 1940, and am now in the engineering department. I don't do anything in particular, but I conduct tests of all kinds, mechanical and electrical, for everyone, test out new designs, see if the damn things will go together in the first place, and, after they do, whether they will work. The average is about 50-50.

"In my travels during vacation time I have met other '37 men. Henry Stuart, VI, worked in Newark for the Crocker Wheeler Electric Manufacturing Company along with Joe Sousa, for a while, and then was transferred to their Philadelphia sales office. He subsequently came to live with my family, and until his call to the Army from the Reserve Corps last December 8, worked for RCA as inspector of tank radios. Now he is working with the radios installed in tanks at Fort Benning, Ga., and if he finds anything wrong with them, he has only himself to blame. This is really an inspector's nightmare. — Fred Kierstead, better known as Pete, is also in Philly. He worked for Philco Radio and Television Corporation after he was graduated and in the meantime got him a wife. They have two children.

"I went to Hartford, Conn., last June 22 to witness the marriage of Paul A. Vogel, XV, to Frances Wish. They met

while he attended M.I.T. and she Boston University. They now live somewhere in New York City. At the wedding were Cleon C. Dodge, II, who was working for Vought-Sikorsky Aircraft when I last heard from him, and Charles W. Dodge, XVI, working for the same firm. On August something-or-other, Charlie married a schoolteacher from Connecticut, and they are now living in Milford. Dick Hutchinson, XV, was also in Hartford and on October 19 was married in Ulster, Pa. I think he lives in Massachusetts somewhere near Boston.

"I am not married yet, but expect to be on May 24. My proposed is a nurse, and is working tonight, New Years Eve, dammit. This is probably the only reason I wrote this letter tonight instead of tomorrow. I hope you can use some of the dope." I can really use dope like this any month of the year, Hugh, and I hope your projected matrimonial career will be a huge success.

John J. Hanlon, II, writes that he is working in the Mohawk Carpet Mills, Inc., of Amsterdam, N.Y.: "I'm in charge of the color-measurements laboratory; the job is chiefly research work. Before coming here, I worked for over a year for Professor Arthur C. Hardy '18 in the color-measurements laboratory at the Institute." Very brief, John; your work must be interesting.

Phil Peters, VI, working for the John Hancock Mutual Life Insurance Company, does considerable traveling — in just what capacity he didn't say, although I think I remember that it was in connection with plant safety. His last letter was written en route to Detroit from Buffalo. Phil is our representative on the Alumni Council, and this year we elect a new representative. I have renominated him; he has done excellent work on the Council, and we can look forward to the future with complacency with Phil guiding that end of things for us.

We now arrive at the division of births, marriages, and other allied items, gleaned from here and there — mostly from the press, although Phil tells me that Dick Young, who is now in Buffalo, as you know, is the proud father of a baby boy. The amazing thing of it is, nothing has been heard from Dick or Marge, so I can't tell the baby's name, weight, or any of the other pertinent data we engineers must work with. From the papers I learned of the following engagements: August H. Schilling to Frances Pennoyer; Matthew L. Rockwell to Mary Hill; Richard U. Surbeck to Barbara Westcoat; and Conover Fitch to Priscilla Hall; and marriages: Carl Sontheimer to Marjorie Rosenberg; George Randall to Grace Johnson; Paul Wheeler Allen to Marjorie Hanson; John B. Corbett to Emmy Bulger; and Paul Yurkanis to Margaret York. That's all for now, boys — or should I say men? — WINTHROP A. JOHNS, *General Secretary*, Route 1, Belle Mead, N.J.

1938

We have received an announcement of the marriage of Given Brewer to Barbara Jenison on October 19 in Yuma, Ariz.

1938 Continued

The couple are now living at 22142 Satcoy Road, Canoga Park, Calif. Rudi Vogel's marriage to Anita Steiber of Bridgeport, Conn., took place on the Saturday before Christmas.

Jack Hilcken and Mary Louise Scott of Eastville, Va., walked down the aisle on January 5 in Washington. Fred Reuter '40 and Frank Gardner gave them the necessary moral and spiritual support. Jack and Mary Louise passed through Boston on their honeymoon, and then, report has it, Jack was called from the reserve to active duty. He will be working in Washington, however, so the couple will not have to move from their new home — 2424 16th Street, North, Arlington, Va.

Still another marriage is that of Charles Delano, II, to Helen Sandra Wood of Watertown. The Delanos are planning to live in Belmont. — Though a mite late, we would like to report the arrival of a son to Mr. and Mrs. Abbott Byfield last May.

We have a couple of engagements to announce, also. First — and this is probably as late as the above item — John S. Bethel has become engaged to Mary Eileen Giles of Lawrence and Washington, D.C. Jack is on the staff of Metcalf and Eddy, sanitary engineers of Boston. At Christmastime Carl Louis Bausch, IX-B, but actually Princeton '39, announced his engagement to Barbara Park of Katonah, N.Y.

A letter from Lloyd Bergeson tells us that he is now established at the Penn Athletic Club in Philadelphia. He is helping with the reconstruction of the Cramp Shipbuilding yards . . . says his squash game is improving . . . "but the skiing down here is terrible." Lloyd says he spent New Year's Eve at the apartment of Doug Esperson and Bud Herbig '37 in Greenwich Village and that Paul and Joanne Shirley were also there.

Dave Burleson is with the Ingalls Shipbuilding Corporation in Birmingham, Ala., doing estimating and design work on the river craft and the maritime commission ships. Two more XIII men and noble members of the S.P.C.D.N.A., Jim Gilliss '40 and Bob Eddy, ran into each other at the New York Motorboat Show. Ira Lohman, we understand, met them both at the Biltmore bar.

A letter of last June from Bob Park, Port Arthur, Texas, brought us some news. Bob Flanagan, he wrote, was down there working for the Pan American Refining Corporation at Texas City. That Beacon Street Bah-ston accent had really been fascinating some of the local talent. Park reported having seen Arnie Kaulakis in Houston and said that he himself had been quite busy in the distillation and light-oil processing department. For your information, Bob, Brother Boissevain is still at the Institute, teaching — and doing quite nicely at home, too. He is well settled in a little place in Arlington with a wife and family.

Other '38 men connected with the staff of the Department of Mechanical Engineering include Ascher Shapiro and Ernie Neumann. Both are married. Ernie is working for his master's degree while

teaching in the steam lab, while Ascher is working for his doctor's with Thys Boissevain. Jim Longwell recently left the Mechanical Engineering staff and is now in Paterson, N.J., with the Wright Aeronautical Corporation.

From the *VI-A News* we steal a few items. Frank Kemp is still located in New York City with Compton Advertising, Inc., and deals mostly with radio advertising accounts. Ralph Slutz is teaching at Princeton University. Besides his classroom activities he is doing some interesting work in mathematical physics. Another instructor is Ernie Therkelsen, who is in the electrical engineering department of Clemson College, Clemson, S.C. He was married over a year ago to Elizabeth Ernst of Billings, Mont., and New York City. Fred Lamb is at the Naval Air Station, Pensacola, Fla., after having an operation on his toes in order to pass the physical exam. He is on an extended leave of absence from Socony-Vacuum Oil Company.

Russ Coile is busily at work in Peru at the Huancayo magnetic observatory. Last May he went through one of the worst earthquakes that country has seen. Even more exciting was "the arrival one Sunday afternoon of a beautiful red-headed Vassar '38 outing Clubber." He describes a hazardous climb to the top of one of the mountains (17,250 feet) and numerous rides on his favorite horse, Rusty. — To quote again from *VI-A News*: "We have glad tidings to shout out about Carl Pearson '38 and Carl Boytano '38 who have recently been wed. May Carl and their wives live happily ever after. Carl Boytano has a new job as development engineer on power cables for the American Steel and Wire Company."

A Christmas card from Jack Wallace gives his new address as 56 Bidwell Parkway, Buffalo, N.Y., though we don't exactly know what he's doing there. — Manuel Callejas has returned to engineering after serving in the consular service for the Republic of Honduras. He is now in that country with the Tela Railroad Company.

Fran Fisher is a sales engineer with a large truck-leasing firm in Cambridge. Another transportation man is Don MacDonald, who is with a common carrier system in Taunton. Right now he is taking some traffic-management courses at Yale. Charlie Wetterer is back at school again. He has given up his real estate work and is taking the intensive course in meteorology at M.I.T.

A card from King Coombs tells us he is now working for Glenn L. Martin. Wes Cilley is in the inspection department of Sears, Roebuck and Company in Boston. — DALE F. MORGAN, *General Secretary*, 55 Pennsylvania Avenue, Mount Vernon, N.Y. RICHARD MUTHER, *Assistant Secretary*, 180 Elgin Street, Newton Centre, Mass.

1939

From Fred Cooke, XV, via the Christmas-greeting route, we hear the following: "I might as well volunteer a little

information. Yours truly is as usual with the Carnegie Illinois Steel Corporation, engaged in this unhappy task of trying to justify appropriations for new equipment — something along the lines of my thesis, but without the benefit of fraternity files. Really, though, we are quite busy these days and are at long last again going through the cycle of steel's being the prince, after years at the pauper game. Bob Touzalin, II, is likewise engaged in making steel around these parts; I should say 'iron' since he's in the blast furnace department at the Carrier furnaces. In his spare time he's learning to fly with the Civil Aeronautics Board. Charlie Hobson, XV, also took the course last spring; he recently left Talon, Inc., and is now with the 313th Signal Aviation Corps at Mitchell Field, N.Y. He seems quite satisfied with everything except the scarcity of 'really classy women.' Woodie Baldwin, XV, reports that he has applied for a year of active duty, and for all I know by now he has answered the call of 'come chum' from the War Department. Bob Saunders, as you probably know, is still making carpets. Bud Morrison, I, is with the Turner Construction Company putting up a new plant for the International Business Machines Corporation in Endicott, N.Y. Washington seems fine to him, but like a great many of the boys, he's casting that anxious glance over his shoulder to see where the long khaki arm will next pause. And so it goes." Many thanks, Freddie. Won't someone else try to get that inspirational corresponding mood in action sometime soon?

From the same Christmas source, Bill Brewster may be quoted: "I yam off to the wars; on the twelfth of Jan., I will be at Aberdeen Proving Ground . . . for quite some time." — And the happily married Larsons, II, at least partly II, have had announced for them: "I'm writing 'cause my Mom and Pop are speechless yet — don't scold 'em; I am such a big surprise, 'cause Winchell never told 'em." Compliments of Ann Marie Larson. Best wishes!

Bill Willard, XVII, writes: "You'll no doubt faint when you see that I'm at last writing a note. [And Willie, you'll probably do the same when you see it finally in print.] Since I wrote you last I've been shooting all over the country; last March I was sent to Pennsylvania as an engineer on the Esso stations for the new Pennsylvania turnpike. That job was really in the sticks. All we did Saturday nights was to watch the local talent parade up and down the one street in Somerset, wherever that is. It was beautiful country but terribly lonesome. Three weeks ago, four of us were sent to Tampa, Fla., to put up a factory for the Continental Can Company, Inc., so we'll be here for about four months. Swimming every week end, and so on; I certainly envy you guys up Nawth."

Flash: From the Assistant Class Secretary, Cambridge, Mass., to the Class of '39: This is an apology to our Class that I have referred to the Class of '38 in these notes in the past, and that it may be necessary to do so again sometime.

"When Good Fellows Get Together" — Alumni Day — June 9

1939 Continued

Apparently my reference of last month was so strong that the whole column was censored. (At least that is a good excuse for their absence.) I am just afraid that the illustrious Secretaries of that Class whose number is one lower than ours (I don't want to mention '38 unless I have to) might not think that this is the real reason for the absence of last month's notes, but I hope, dear readers, that you do. Yours sincerely for stronger class defense. — STUART PAIGE, *General Secretary*, Box 207, Greenwich, Conn. MORRIS E. NICHOLSON, *Assistant Secretary*, The Graduate House, M.I.T., Cambridge, Mass.

1940

A letter from Herbert B. King tells me that he has been appointed to the staff of the Army Nutritional Research Laboratory in Chicago. He feels that he has been extremely fortunate in obtaining this position. You will recall that the December Review contained an article, on pages 78 and 91, about Mr. King, and a cartoon by Dahl pertaining to the article. — Rowland Peak, I, writes that he is now with the Illinois Central Railroad and is situated at McComb, Miss. Rowland is asking for the whereabouts of Andy Carr: "Is he over fighting Benito's boys?" I'm sorry I can't answer the question, but perhaps some of you other fellows can. — Abe Rockwood has been rushed away with the National Guard and is now located in Camp Hulen, Texas. Rocky says that everything in that section of the country is soaked in two feet of mud. I can assure him it will be quite different in July.

Unless I am mistaken, the mention of Judson C. Rhode's marriage on Saturday, December 28, to Elizabeth W. Reardan has never been made in this column. Mr. and Mrs. Rhode are making their home in Boston. — Engagement announcements that have come to my attention are: Lucille Winlock of Lexington, Mass., to J. Harry Orpen, Lieutenant in the United States Army Air Corps at San Antonio, Texas; Anne Watson to William Travis Green of Fort Worth, Texas; Priscilla Schirmer to Robert T. Church; Helen Bunker to John K. Ross, who is now attending McGill University. — On October 12, Laura Susan Frissell became the bride of John H. Bech. Mr. and Mrs. Bech are living at 226 West 27th Street, New York City.

Not long ago I had dinner with Harry Sedgwick, XIII, who has been working as a fitter with the Newport News Shipbuilding and Dry Dock Company. Harry couldn't tell me much news concerning the Course XIII men, and I'm still wondering what has become of Fred Noonan, T. V. Kyllonen, and others. Even Val deOlloqui has moved about so much that I've been unable to catch up with him.

On January 8, the M.I.T. Club of the Virginia Peninsula met to hear B. Alden Thresher '20, Director of Admissions at the Institute, speak. Although there are probably seventy or more Alumni in this district, I'm sorry to say that none of these are members of our Class. Perhaps there are some '40 men in this section of the country, but, other than Harry Sedgwick, I've been unable to locate any.

Crosby tells me that F. Chase Godfrey took a healthy vacation last summer, fishing in Canada, and that he is now back at school taking the Course in Chemical Engineering. — I understand also that Beano Goodman at last bought a car, "and is therefore broke." He is now located in New Albany, Ind.

Wylie Kirkpatrick is now working for E. I. du Pont, and thinks that he may get to Indiana sometime in the spring. The engagement of Arlene Stevens of Boston to Joe Casey has been announced, but we aren't sure whether a wedding date has been set. In fact by the time this is printed they may be Mr. and Mrs. — Up to his old tricks, Paul Jensen says that horses are not the only beautiful things raised in near-by Texas. Paul is located in Louisiana — but then Texas is so close.

Dave Heskett is associated with the Montana-Dakota Utilities in their field work. At last accounts he was temporarily located at Baker, Mont., where the company is doing considerable development work. During the summer an eight-inch pipe line, 120 miles long, was built, and also some drilling was done in the Bowdoin and Baker gas fields. At the time he wrote, early in December, Dave was trying to learn a little about drilling and was finding it very interesting. The weather was reported to be excellent, although the temperature had gone as low as 20 degrees below zero.

Harry E. Martin is now employed in the Santa Monica division of the Douglas Aircraft Company, Inc., as a flight research engineer. He was married to Jeanette R. Walker on December 17.

Pedro Alberto deCastro has been having an exciting career in Puerto Rico since his graduation. He worked for three months for Jorge Ramirez de Arellano, a noted architect and contractor of San Juan. DeCastro got much valuable experience in the whole profession, from meeting the client to making preliminary sketches, and finally to supervising the job. He left San Juan to go into partnership with a Floridian architect who was opening a branch office in Puerto Rico. The partnership failed, however, and Pedro set out in business for himself. He is now in partnership with a young engineer, designing apartment houses and residences as fast as he can turn them out. Pedro is soon to be, or already has been, married to Elouise Breckenridge of Louisville, Ky.

From Dave Morgenthau I received a most interesting letter: "Ken Bodger, Rafael Martinez, and I are rooming together here in the Graduate House, and we are looking forward to having any of the boys stop in for a while. Bill Kather, Jim Rumsey, Bill Hagenbuch, Joe Owens, and George Weinbrenner have been in to see us. George is working at the Watertown Arsenal and is taking a couple of courses at the Institute. I don't know all of the Course X boys who are at the practice school, but among them are Dick Gerges, Russ Haden, Bill Hagenbuch, Herb Hirschland, and Norm Klivans.

"Hap Farrell, Bob Godfrey, Reeve Morehouse, Frank Penn, Ed Seim, and Russ Winslow are all living here in the Graduate House. They seem to be having a lot of fun, and the boys are part of an athletic combination, on the second floor, which has been cleaning up. Others doing graduate work this year are: John Danforth, Dick Dunlap, Herb Hollomon, Lester Lees, Jack Leschen, Seth Levine, Henry Rapoport, and Roy Tuttle."

There could and would be so much more news if you would just take a few moments to drop me a line, even a post card. As for myself, I have gone on a seven-day week, in the interest of defense, so I've heard, but even so I've found time to become enthused over a basketball league here. Probably when you see me at our twenty-fifth I'll still be talking basketball. — H. GARRETT WRIGHT, *General Secretary*, 324 57th Street, Newport News, Va. DAVID T. MORGENTHAU, *Assistant Secretary*, The Graduate House, M.I.T., Cambridge, Mass.



MORE THAN MEETS THE EAR

Getting the right metal for a door chime sounds like a simple problem. But is it?

By no means as we found out. In spite of the fact that here at Revere Copper and Brass Incorporated we have amassed over the years a most comprehensive file of data on copper and its brood of alloys, the problem of the right metal for a door chime called for new research.

An exhaustive investigation was undertaken. It was necessary to consider the resonant features, the length and strength of overtones, the surface finish, the machining qualities, and the material and production cost.

In all—even with the head start we had from our data—over six different alloys and numerous tempers, comprising thirty possible combinations had to be tested, before the right alloy, with the right sound, at the right price, was selected.

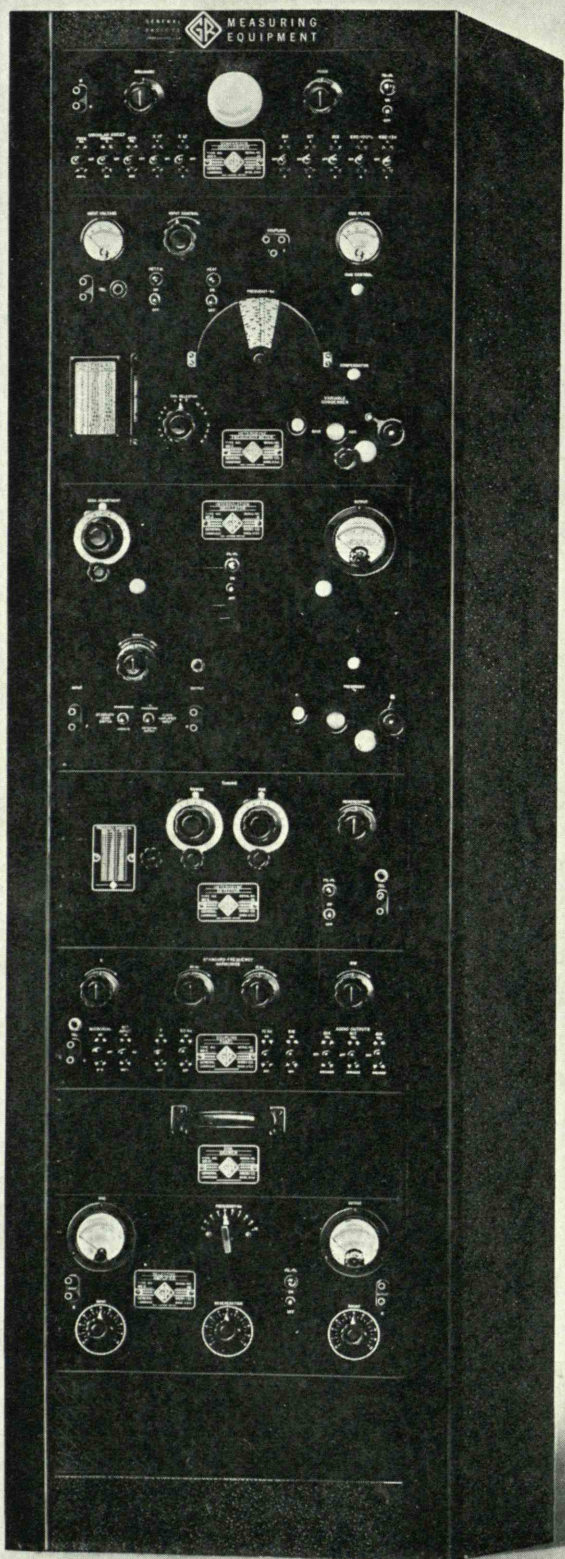
There has long been a need for someone to amass the multitude of data on copper and copper base alloys; and to use this mass of knowledge as the springboard for practical research to solve a myriad of today's defense, industrial and manufacturing problems.

Revere Copper and Brass Incorporated has done this. Valuable as this knowledge is, our willingness to undertake practical industrial research in tackling a problem on which we don't have facts is of greater value. And, as you see, even a door chime gets the right service at Revere.

REVERE
COPPER AND BRASS INCORPORATED
230 Park Avenue, New York, N. Y.
*Sales Offices and Distributors in
most of America's major cities*

MILLS: BALTIMORE, MD. • TAUNTON, MASS. • ROME, N. Y.
NEW BEDFORD, MASS. • DETROIT, MICH. • CHICAGO, ILL.

Precise Measurements of Frequency with G-R Measuring Equipment



FROM THE G-R PRIMARY STANDARD OF FREQUENCY, fundamental frequencies of 50, 11, 10, 9, 1 and 0.1 kilocycles are obtained. By means of harmonic frequency multipliers in the primary standard, a large number of harmonics of each of these frequencies are available, also, at the output terminals of the standard.

For the precise measurement of frequencies in terms of these standard frequencies, suitable auxiliary and interpolation equipment is needed. The G-R Frequency Measuring Equipment assembly, with the Primary Standard of Frequency, makes possible the accurate, direct, precision measurement of *any* frequency from a few cycles up to 25 megacycles, or higher if external receivers are used.

The units comprising the measurement equipment are as follows:

Heterodyne Frequency Meter covering the range of 100 kc to 5,000 kc in sixteen steps. Sufficient harmonic output is obtained to produce beats in a high-frequency receiver operating at 30 Mc or more. For many measurements, sufficient accuracy is obtained through use of direct-reading finder and interpolation dials on the heterodyne frequency meter.

Interpolation Oscillator which is a direct-reading, linear-scale audio-frequency oscillator covering frequencies between 0 and 5,000 kc. It is used to measure the audio-frequency differences between the unknown frequency (or a submultiple thereof) and a standard 10-kc harmonic. When the difference is very small, use is made of the 9-11 kc standard harmonics to avoid measurements with very low audio frequencies.

Heterodyne Detector with plug-in coils covering the range from 25 kc to 25 Mc. This detector is used to obtain beats between the standard and the unknown radio frequencies.

Regenerative Selective Amplifier which is used to select any multiple of 1 kc between 1 and 10. This amplifier is particularly useful when the cathode-ray Comparison Oscilloscope is used in calibrations in the upper audio-frequency and lower radio-frequency ranges.

Comparison Oscilloscope with 100-cycle and 1,000-cycle smoothing filters, networks for obtaining circular sweeps at these frequencies, and switches for connecting units of the frequency standard and measuring equipment to the oscilloscope.

THE assembly is housed in a steel cabinet and includes a built-in loud speaker. Permanent shielded connecting cables between the measuring equipment and the Primary Standard and for all interconnections between units of the measuring assembly are furnished. All connections for actual measurements are made by suitable switching on the centralized coupling panel, through which the standard and unknown sources and the various measuring instruments are connected. Suitable power supplies for a-c operation from 115/230 volts and 50-60 cycle mains are individually built in each instrument.

GENERAL RADIO COMPANY

Cambridge, Massachusetts

BRANCHES: NEW YORK AND LOS ANGELES

MANUFACTURERS of PRECISION ELECTRICAL LABORATORY APPARATUS